The Mining Journal

Established 1835 — Railway & Commercial Gazette

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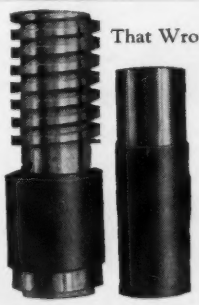

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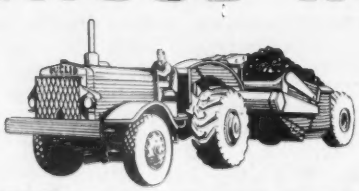

and Agencies throughout the World

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NOTES AND COMMENTS

The Question of U.S. Tariff Changes for Lead and Zinc

Brief summaries are now available of the special report called for from the U.S. Tariff Commission by the respective Committees of the House and Senate Branches of Congress in regard to lead and zinc imports now under consideration with a view to possible tariff changes. The present report forms no exception to the extreme length to which such reports usually extend in the United States. It comprises 550 pages, but the portion on which all six members are agreed contains no definite recommendations as to tariff changes as they considered that this is essentially a question for Congress to decide. Two members of the Committee regretted the non-committal character of the agreed report and were in favour of measures to increase the price of lead and zinc provided it did not discourage domestic consumption in the future or lead to increased substitution of other materials.

The whole question of whether the United States will adopt freer trade or the converse in its relations with other countries is, of course, highly controversial and it is hardly surprising that the present interim report should be as non-committal as possible. The Tariff Commission is due to present a report to the President as regards relief under the "Escape Clause" by the middle of June and may do so even earlier. Under Article 15 of the G.A.T.T. and Sec. 7 of the 1951 Trade Agreements Act the President is at liberty where necessary to impose increased import restrictions. Under the Tariff Act of 1930 rates could be increased up to 50 per cent above those existing on January 1, 1945, and import quotas might also be established. The chief interest of this interim report probably resides in the inferences which may be drawn as to the probable character of the final report due in the next month or six weeks.

There are, however, certain features in the report of general interest to producers, consumers, and markets outside the United States. Thus we are told that, while consumption there of both lead and zinc has greatly increased since the war, outside the U.S. consumption of lead has diminshed substantially while zinc has only slightly increased. Five countries with only a small internal consumption accounted for 85 per cent of the U.S. imports of lead and zinc in the five years 1948-1953. These countries were Mexico, Peru, Canada, Australia, and Yugoslavia.

The possibility is emphasized that further restriction of lead and zinc imports, while helpful to domestic producers temporarily, could, owing to the domestic price being tied to that of the world price, force the latter to lower levels to the detriment of United States companies operating abroad.

According to the report now under notice a large part of United States imports is accounted for by companies in which its corporations have substantial interests. In Mexico virtually all smelting and refining of lead and zinc is done by companies in which U.S. concerns have a major interest. Similarly in Peru, Cerro de Pasco is responsible for practically all smelting and refining of these metals. In Argentina a U.S. corporation's subsidiary is responsible for the bulk of the output. In South-West Africa and French Morocco U.S. producers have either a major or substantial interest in the principal producers. In Guatamala a U.S. company is the major source of all imports from this Republic. In Canada companies under United States' control are not responsible for more than one fifth of her exports to the U.S.A.

The importance of the production of secondary metal is very large in the case of lead—exceeding the output of primary metal from domestic mines—and this source of supply is expected to increase. Secondary zinc is a less serious competitor and does not average more than 80,000 s.tons a year. Not unreasonably, the report refuses to express any opinion on the probable level of domestic mine output in the future.

Owen Falls Hydro-Electric Scheme

The £16,000,000 Owen Falls hydro-electric scheme, opened by the Queen yesterday during her visit to Uganda, is the result of six years intensive work and the realization of a dream half a century old. Ample electric power sufficient for Uganda's needs for many years will be provided and the scheme will become an integral part of the plan to control the Upper Nile for the benefit of Egypt and the Sudan. In this connection it is interesting to note that it has been agreed that the Uganda Electricity Board should control the flow of water through the dam in accordance with the wishes of the Egyptian Government. In fact, because of the limitation which this imposes on Uganda's freedom of action and because the dam has actually been

built one metre higher than would be necessary for the generation of power so that Lake Victoria could be used to store water for Egypt, it was announced earlier this week that Egypt had paid to the Uganda Government the sum of £980,000 in compensation for the resultant loss of power.

One of the first to recognize the possibilities of this development was Sir Winston Churchill, who in *My African Journey* wrote of Owen Falls in 1908, "It would be perfectly easy to harness the whole river and let the Nile begin its long and beneficient journey to the sea by leaping through a turbine." The dam and power house are situated a mile and a half from the source of the Nile, where it flows through a restricted channel 500 ft. wide.

This great Empire development scheme has been carried through in a remarkably short period and at a time when materials such as cement and steel were in extremely short supply. Everything had to be transported 750 miles by rail from Mombassa where it had been brought thousands of miles by sea from the United Kingdom or Europe. A certain amount of earth-moving plant required in the early stages came from the U.S.A., which at that time was able to offer earlier delivery than British manufacturers.

The civil engineering work representing £5,500,000 of the total cost, was carried out by the Owen Falls Construction Co., an international consortium of four British firms and four Dutch for the Uganda Electricity Board. The composition of the consortium is the same as that which so successfully rebuilt the port of Rotterdam after the war and this form of association is a development which may well become familiar in connection with other major projects in undeveloped areas of the Commonwealth and elsewhere.

Many problems have had to be surmounted. The large flow of water which could not be entirely cut off because of the need to safeguard Egypt's supplies, faults which were discovered in the river bed and had to be sealed, the insatiable curiosity of wild animals, all created difficulties on the site. Finally, the tremendous currents and high water pressures involved made the closing of the last temporary opening in the dam a most difficult operation.

The dam, 100 ft. high, will increase the storage capacity of Lake Victoria and submerge the famous Rippon Falls. The main dam will carry Churchill Way, which will provide a new road crossing of the Nile, so taking the place of the original bridge which is now partly submerged.

U.K. Iron and Steel Industry in 1953

The annual report of the Iron and Steel Federation for 1953 is a satisfying document. This feeling could be attributed to the knowledge that the British iron and steel industry forged ahead mightily last year at a time when production capacities were being lowered on the Continent and in North America. A more substantial view, however, is that the present expansion has in no way over-reached itself and that its maintenance and even further growth is based on demand schedules, the continued effectiveness of which represent no more than the usual calculated risk all enterprise must face.

The production increase last year of 1,500,000 tons to a total of 17,600,00 tons was absorbed as between an additional 600,000 tons by the metal using industries, a further 700,000 tons to offset the reduction in imported supplies, and a final 200,000 tons was taken up by increased exports.

Direct exports are not, as yet, an important factor on the demand side; the immediate future of the industry being concerned with filling the gap made by further cuts in imports, and by the increasing demand in the home market for steel from the U.K. manufacturer. The importance to the industry of "indirect exports" may be judged by the Report's estimate that these exports consumed 4,500,000 tons in 1953, or approximately a quarter of total output.

The Rhodesias

(From Our Own Correspondent)

Salisbury, April 22.

Negotiations are shortly to take place between the Rhodesia Railways Board and representatives of the copper mining companies of Northern Rhodesia on the subject of railway rates. A discussion has already been held between the general manager of the railways and the general managers of the four producing copper mines in the Territory about a possible increase in the present contract rates at which the railways carry copper to Beira.

Under an agreement signed in 1938 the mines undertook to pay .67d. per ton/mile on copper traffic. The agreement is due to expire in 1955, but in the meantime there has been a considerable public outcry through the correspondence columns of the Rhodesian press in which multitudinous accusations have been levelled at the railways, the copper mining companies, the government, and, in fact, anybody who had a hand in the signing of the 1938 agreement.

The public's complaint briefly is that the copper mines, by transporting their produce at a preferential rate, have been subsidized by all other users of the railways.

It is understood that a 30 per cent increase in the rate applicable to copper is envisaged, which would raise the cost to the mining companies to .87d. per ton/mile. Since the average all-in working costs of the railways amount to 1.05d. per ton/mile, the railways would still lose .18d. per ton/mile on the carriage of copper. Incidentally, it has been estimated that in the coming financial year Rhodesian Railways will lose about £1,000,000 on this traffic.

FISCAL RELIEF FOR GOLD INDUSTRY

Mr. Hatty, the Southern Rhodesia Minister of Finance, announced in his Budget statement last week that in an attempt to alleviate the difficulties of the Colony's gold mining industry the government would introduce legislation designed to raise the levels of mineral output at which mining royalties become payable. In the course of his statement, the Minister said that notwithstanding a record production of minerals in 1953, severe difficulties were encountered in the marketing of lower grade asbestos and, subsequently, in the early part of 1954, in the marketing of chrome.

The Canadian (Overseas) Asbestos Corporation, which recently acquired an asbestos mine in the Belingwe district of Southern Rhodesia, is understood to have set aside $3,000,000 to develop the mine's output to 15,000 tons of fibre a year. The output of this mine will be exported to India. The same concern is at present negotiating for further asbestos, phosphate, copper and gold properties in the Federation.

COAL PRODUCTION AT WANKIE

Production of coal at Wankie, which is normally of the order of 10,500 tons a day, and which, because of a fault in No. 2 shaft is down to about 8,500 tons a day, may be expected to return to normal in about the second week of May. The decrease in production has had no effect on the copper mines, where stocks are reported to be "adequate."

The leader of an Australian trade mission which recently concluded a comprehensive tour of the Federation, said in Bulawayo that he thought Australia's purchases of copper from Northern Rhodesia were likely to increase with the disappearance of import licences and the liquidation of stockpiles. He also said that the mission had been interested in three minerals produced in Southern Rhodesia. He would not, however, disclose their identity.

Canada

(From Our Own Correspondent)

Montreal, April 23.

The Canadian Government continues to accumulate gold. The reserves of gold as of March 31 were $1,016,000,000 which is the highest level in the country's history. In addition is a reserve of $811,000,000 in U.S. currency. As long as the government continues to buy gold there is small likelihood of Ottawa making anything more than a feeble plea for a higher price for the metal. As a result, gold producers throughout the country appear to have become pretty well reconciled to continuation of the current low price of $35 an oz.

Indicated resources of uranium in the Blind River area of Northern Ontario are mounting. Algom Uranium Mines, sponsored and controlled by experienced mining men and financiers, has officially estimated 11,000 tons of ore per inclined ft. in one ore shoot having a length of 7,000 ft. The ore contains 1.5 lb. U308 per ton or some $11. Estimating recovery at $10 per ton, some close observers have been working their sharp pencils and have arrived at impressive conclusions. These point to recovery of $110,000 per inclined ft. as indicative of an output of $110,000,000 per 1,000 ft. inclined depth.

Diamond drill cores have been drawn from several hundred feet in depth and have shown continuity of the ore. An initial milling plant of 2,500 tons daily is under consideration. The property embraces a length of more than 24 miles along the contact zone which is considered to represent the structural condition favourable to the deposition of uranium-bearing deposits such as those so far under exploration and development. Preston East Dome, one of the long-established gold producing mines of the Porcupine field, controls the Algom Uranium.

Falconbridge Nickel Mines has completed financial arrangements for major expansion under which a first mortgage, and collateral trust bonds of $30,000,000 will become available as required. Current operating revenue of Falconbridge is approximately $2,500,000 per month. This comes from the treatment of close to 100,000 tons of Falconbridge ore per month, plus revenue derived from treatment of ore from other properties. Mining operations during the past year resulted in development of more than 200,000 tons of new ore per month, a rate more than double the tonnage being drawn from the mines.

LABRADOR IRON ORE

Iron ore shipments may begin from the Labrador field about July 1 and will consist of a gradually increasing flow designed to spread along the transportation system and test out the shipping facilities. Regular shipments may become established by early August. Hopes are entertained that 1,000,000 tons may be delivered to tidewater at Seven Islands and sold into the iron market before the close of 1954. With the opening of navigation one year from now the mines, as well as the system of transportation, will be in readiness for a steadily increasing flow of ore each year for many years to come. The known resources of iron in Quebec and Labrador offer promise of an ultimate yield of 20,000,000 tons annually. And accordingly, as communities become established on the strength of building the iron mining industry, there is good reason to believe other minerals will become revealed to the searching eyes of prospectors who are already finding their way into the unexplored areas lying outside the iron ranges.

Steep Rock Iron Mines in Northern Ontario continues to grow, with sales for the past year having averaged approximately $1,100,000 per month. The net profit of $3,400,000 realized during 1953 stands out as substantial inducement to not only expand Steep Rock operations itself, but to bring additional mines into production.

Kerr-Addison Gold Mines at Larder Lake in Ontario is developing into a higher grade producer than originally indicated. Values in the lower levels have about doubled the average grade found closer to surface. In that part of the mine below 2,500 ft. in depth the average grade is $14 per ton. This compares with an average recovery of $7.28 per ton during 1953, chiefly from ore above that horizon. Current output is at a rate of approximately $1,000,000 per month from some 137,000 tons of ore. Net profits are at a rate not far under $300,000 per month.

Geco Mines in the newly discovered zinc-copper-silver area of the Manitouwadge area in north-western Ontario has been extensively diamond drilled to a depth of 550 ft. Preliminary unofficial estimates suggest an indicated 10,000,000 tons of ore. Further drilling is in progress with three machines, and with a fourth to go into operation soon. It is part of the objective to probe at least 1,000 ft. vertical for information on which to base plans for shafts and reduction works. The outlook is that initial plans will be based upon a plant capacity of 5,000 tons per day.

Operations at Noranda Mines in Quebec are back almost to normal following the end of the labour strike early this year. Current revenue is approaching $2,000,000 per month at this leading copper-gold mine of the province.

HYDRO ELECTRIC POWER

Preliminary steps are being taken toward ultimate harnessing of one of the world's great waterfalls for industrial use. This has to do with Grand Falls situated on the Hamilton River in Canada's Labrador peninsula. The initial $1,000,000 has been provided for the preliminary work which is to begin this year in the preparation of survey and plans upon which to base the development programme. The Hamilton River makes its head in the heart of the Ungava district of northern Quebec, draining vast areas seldom visited by man until the advent of the airplane.

The staff correspondent of *The Mining Journal* trekked to the headwaters of the Hamilton more than forty years ago at which time the iron ore of Labrador was unknown and the development of waterpower in the area little more than a dim part of the possibilities of future years. At Grand Falls the broad sweep of the Hamilton River narrows down to a width of some 200 ft. At this point the water plunges from the huge plateau for a vertical drop of 316 ft. into McLean Canyon. For a distance of 12 miles the water churns with great force for a further drop of approximately 300 ft. It has been estimated that Grand Falls is only second in magnitude to Niagara Falls in all of North America, and there are those who have expressed the opinion that in actual development Grand Falls will exceed the h.p. derived from Niagara itself.

One thing is certain, namely, that the complete harnessing of Grand Falls will in the end involve outlay measured in hundreds of millions of dollars. One particularly favourable aspect is that the great power site lies about midway between the iron ranges now going into production to the south and the additional vast deposits of iron coming under development near Ungava Bay to the north. The project holds a place of importance on a parity with that of the development of the deep seaway of the St. Lawrence River, and the building of the $500,000,000 pipeline for carrying natural gas from the Canadian west to the industrial provinces of the east. Indeed, the development of Grand Falls into a vast hydro-electric power project will mark the beginning of a new era for a virgin area embracing not less than 150,000 sq. miles.

The Aerial Ropeway at Amalgamated Banket Areas, Gold Coast

It was recently reported that the new aerial ropeway had been completed at Amalgamated Banket Areas Limited, Gold Coast. The function of this ropeway is to transport gold bearing ore from the Fanti section of the property to the central mill, and its construction constituted a major engineering feat in difficult terrain. The following article, published by kind permission of Amalgamated Banket Areas Limited, presents a full description of the ropeway. The operation was marked by most successful collaboration between the engineers of the British Ropeway Engineering Company Limited, who constructed the cableway, and those of Amalgamated Banket Areas Limited, who undertook the layout and construction of access roads and supervised the major portion of the excavation and foundation work.

Prior to 1950 when they were absorbed by Amalgamated Banket Areas Limited, South Banket Areas Limited at Tamsoo mine, and Gold Coast Banket Areas at Fanti mine, operated as separate companies, each mine running as a self-contained unit with its own mill for processing the gold ore.

An example of the difficult terrain over which the cableway was constructed

After amalgamation it was decided to shut down these two mills and install aerial ropeways to carry the ore to the central A.B.A. mill at Abbontiakoon instead.

Whilst Amalgamated Banket Areas did not themselves possess any monocable ropeways prior to amalgamation, there were three on the South Banket Areas Limited (Tamsoo) and one on the Gold Coast Banket Areas Limited (Fanti). Amalgamated Banket Areas own ropeways comprised of four undertype bicable ropeways, and one overtype bicable ropeway.

The features which distinguish between these installations are :

Monocable : where one moving rope carries the buckets clipped to it and which does not require a separate track rope.

Undertype Bicable : where the buckets are pulled along a fixed track rope by a separate moving hauling rope attached to the bucket carriages below the track rope.

Overtype Bicable : which also employs a fixed track rope, but on which the moving hauling rope is attached to the carriage above the track rope.

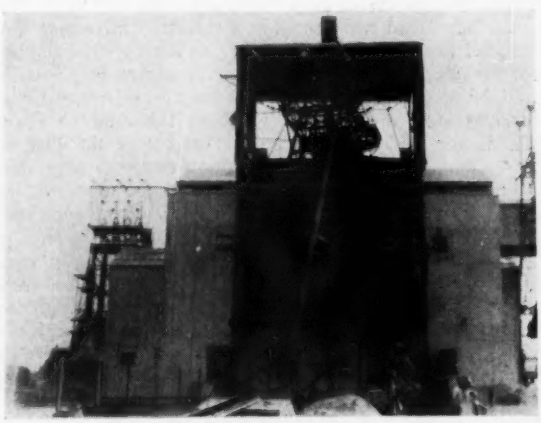
The Akontasi plant had not been re-started since the War and, after careful consideration, it was decided to dismantle the original overtype bicable ropeways serving this particular section, and utilize the materials to build new ropeways from Fanti to Tamsoo.

DESIGN OF THE INSTALLATION

The design of these ropeways was put in the hands of British Ropeway Engineering Company Limited, London, suppliers of the original ropeways. Preliminary designs were completed in London, and Breco engineers were sent to the site in July, 1950. Tamsoo ropeway was installed first and went into full operation in the summer of 1951, using existing ropes, etc., from the Akontasi line, together with some of the T.S.M. trestles.

On the Fanti line, however, more new steelwork was required, and it was also decided to install all new ropes. Altogether, two new stations and 26 trestles were supplied, as well as 20 new stools, to increase the height of trestles.

The new line is straight, and consists of a loading station, track rope double tension station, track rope anchor tension station, drive station and unloading station, with 51 intermediate trestles. As will be seen, the difference in elevation between the two ends is small, the line is rather hilly between and, for approximately 1,500 yds., passes through a deep swamp which caused quite a lot of difficulty during erection of the ropeway. It is an undertype bicable ropeway, using two-wheeled carriages and buckets of .9 s.ton capacity. The track ropes on which the carriages run are 5 in. and 3½ in. circumference locked coil for the fulls and empties sides respectively, of 80/90 tons steel, and the hauling rope of 1¼ in. Langs Lay. The capacity of the rope is 50 s.tons per hr., and it is driven by a 35 h.p. electric motor through a conventional drive unit, using a primary worm reducer and secondary spur reduction.



The unloading terminal

The loading station was partly rebuilt from the ex-T.S.M. loading station, and partly fabricated on site. The front part of the T.S.M. station was maintained, using the same layout of mechanical parts, except that the original driving sheave was adapted as an idler sheave, the new line being driven by a separate drive station. The rear of the station was designed and fabricated on site and extends under the whole 120 ft. length of the ore bin, the buckets being filled at one of the ten shoots in the side of the bin and then pushed around the shunt rail into the locking frame where they are automatically clipped to the hauling rope, and pulled out on to the track rope. There is also a parking rail fitted at the rear of the station to enable buckets to be taken out of commission for service without interfering with the running of the ropeway.

At the track rope double tension station the locked coil track ropes are taken over cast steel saddles at the entrance and exit of the station, the carriages running along shunt rails between the saddles. The ends of the track ropes are coupled to flexible ropes of equal strengths which pass over sheaves within the station, and are attached to hanging weighted cages of 20 and 9.75 tons for the fulls and empties sides respectively, which maintain a constant tension on the track ropes under all operating conditions.

At the track rope anchor tension station one set of track ropes are tensioned as above, whilst the track ropes from the opposite direction are capped at the ends and fit into a special anchorage, being tensioned at the other end.

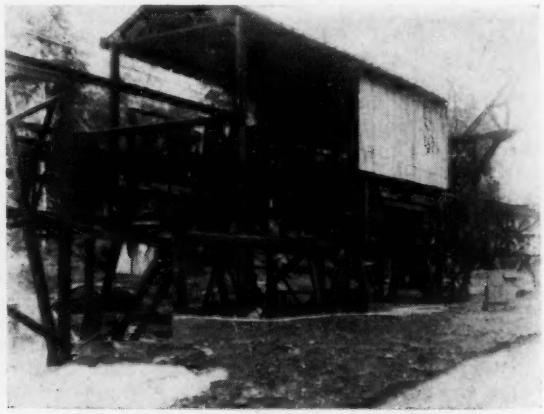
DRIVING AND UNLOADING STATIONS

The driving station is built over the fulls side only, the empties side track rope being carried past it on special trestles.

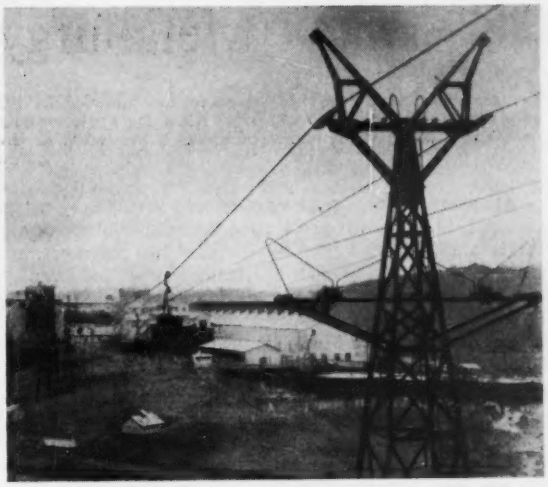
The buckets automatically unclip from the hauiing rope as they enter the station, the hauling rope then passes round a Karlik type gripping drive sheave, and back round an idler sheave. The buckets are pushed along a shunt rail past the driving gear and are then automatically re-clipped to the hauling rope after it leaves the idler sheave and carried back on to the track rope.

Control of the ropeway is by signal bells and telephones.

The unloading station is of the automatic type where the buckets travel through the station, round the 3 metre return sheave, and back out again, the catches of the buckets being knocked out by suitable tripping arms within the station, and the buckets discharging their loads into the bin beneath without stopping. The main part of the station was re-erected from the T.S.M. unloading station but, whereas the T.S.M. unloading station incorporated the track



The new driving station



Line leading to the unloading station

rope tensioning gear, the new station was adapted as a rope anchorage station. The supporting steelwork on the top of the bin, as well as the main strut from the station front to the ground, was designed and fabricated on site.

ERECTION OF THE LINE

The erection of the line was carried out in conventional manner, the line being surveyed and then an access road built as close to the surveyed line as possible, as the bush through which it passes is otherwise virtually impassable. Foundations were excavated and cast, and available trestles and stations erected in turn. New trestles, old trestles needing new stools to increase the height, and new stations, were erected as the steelwork arrived, or was fabricated. When the necessary steelwork had been erected the track ropes were run out, erected and tensioned, followed by the hauling rope. The driving gear was tested and the hauling rope tensioned and spliced and then, in July, 1953, the ropeway was started without buckets.

After checking the rope only running a single bucket was sent round and carefully checked over the whole circuit, the line then being temporarily shut down for minor adjustments to be made. Next, approximately two-thirds of the empty buckets were fed on to the line and performance checked, and finally, at the end of July, 1953, the ropeway started carrying gold ore.

During the next two weeks further adjustments were made whilst the line was running and additional buckets added to bring the capacity up to the full 50 tons per hr. Considerable inconvenience was caused by deep swamps extending approximately 1,085 yds. from trestle No. 26 to trestle No. 32, only trestles Nos. 28 and 29 being directly accessible by a main road passing through the swamp. To take gear from trestle No. 29 to trestle No. 32, a matter of 482yds., involved a detour of approximately 3 miles. Trestles Nos. 27, 30 and 31 were erected in the heart of the swamps and access was only possible by means of a bamboo causeway built right into the swamps and which, incidentally, was washed away periodically by the very heavy rains. All the trestles in the swamp area necessitated special raft foundations to give a very low bearing pressure. The anchor tension station was sited in the swamp area and these foundations also required special treatment.

Just prior to the pulling out of the track ropes a dam holding back mill slimes near the ropeway burst during excessive rains and the slimes carried across the ropeway line in the swamp area created some difficulties during the rest of the erection.

Metallurgy in Morocco

The metallurgical industry of Morocco was founded in 1914, and developed at a generally steady rate of output until the outbreak of the Second World War, when the Protectorate's isolation brought a boom in an effort to supply the home market. Indeed, the satisfying of home consumers is the *raison d' être* of the Moroccan metallurgical industry which is described in the following article.

Morocco's metallurgical industry was founded by necessity in 1914, only two years after the establishment of the Protectorate. At that time there existed two foundries, one at Casablanca and the other at Khenitra, now Port Lyautey, whose entire output went to the equipment of the railways then being constructed, together with a small quantity of castings for the new-born industrial enterprises in the country.

Thirteen years later there were eight foundries with a total annual output of some 500 tons of castings and pig iron. In 1938 production rose to 2,500 tons and in 1944 to 3,000 tons. Then the world-wide shortages caused by the war, and Morocco's virtual isolation, brought a boom in the industry which strove to supply the home market.

Thus, in 1948, there were 26 foundries plus three other plants devoted to pattern-making. Production in this year leapt ahead to a record high. The industry employed some 1,300 workers, two-thirds of them Moroccan, and the total output from all 26 plants amounted to 8,000 tons of pig iron and various castings, 1,500 tons of bronze castings, 1,000 tons of aluminium and other metals.

INCREASE IN PRODUCTION

At the end of 1952 Morocco could claim 35 different foundries producing 5,000 tons of pig iron, 1,000 tons of steel castings, 500 tons of bronze and 200 tons of aluminium.

The gradual rise in production and fluctuations due to the volume of competition from overseas can be seen from the following tonnages of metals and metal parts: 1938, 6,820 tons; 1948, 6,380 tons; 1949, 6,980 tons; 1950, 7,390 tons; 1951, 7,100 tons; and 1952, 6,650 tons. It will be seen that there is a slight recession, due, according to industrialists, to increasing competition from abroad. The same sources believe, however, that the industry will soon be able to cope more favourably with this competition. Meanwhile it is hoped that imports of manufactured mechanical parts will be limited in order to give some preference and incentive to the home industry.

Morocco's metallurgical industry is gradually being equipped with all the latest machinery and in this way it anticipates being able to offer increasing competition to imported products. Twelve of the foundries operating at present are capable of outputs on the industrial scale and some are equipped with the latest in vertical forced-draught furnaces.

The Chamber of Metal Founders in Morocco is composed of 38 members including three from ancillary trades. They have grouped themselves together into a purchasing and importing co-operative by means of which they have been able to supply themselves with raw materials and equipment at competitive prices.

With regard to Morocco's production of metal ores annual production of the principal ones is indicated by the following approximate figures: iron ore, 600,000 tons; lead ore, 120,000 tons; zinc ore, 50,000 tons; cobalt ore, 9,000 tons; antimony, 1,500 tons. In addition, Morocco produces about 500,000 tons of anthracite and 400,000 tons of manganese, two products vital to the metallurgical industry.

One of Morocco's most modern foundries is at Skrirat, between Casablanca and Rabat, which operates under an American licence and produces a variety of metal castings in carbon steel varying from very soft to hard, special steels such as manganese, nickel-chrome, molybdenum and ductile steels.

The largest foundry, and incidentally one of the oldest concerns in the Protectorate, is the Tabors foundry at Casablanca which employs 130 people and turns out over 2,600 tons of products a year. In 1952 this plant produced 1,550 tons of ferrous castings including steel, 120 tons of bronze parts and 12 tons of aluminium.

CURRENT OUTPUT

To-day the metallurgical industry comprises 15 industrial foundries producing copper alloys, 13 workshops also turning out copper alloys, five others specializing in copper alloys on a semi-industrial scale, two iron and steel foundries, two making chill-castings of various alloys, plus two refining plants, two pattern-making plants and the plant at Sidi Marouf, near Casablanca, which turns out manganese concentrates.

Manganese concentrates at Sidi Marouf are produced at the rate of 130,000 tons a year in a plant which operates 24 hours a day, with a stop of 16 hours a week during which time the machinery is cleaned and inspected. The factory turns out 480 tons of manganese concentrate each working day.

Among the non-ferrous foundries mention must be made of the lead foundry at Oued el Heimer which has an annual capacity of 30,000 tons and in 1951 produced 18,000 tons. During the first nine months of 1953 30,866 tons were smelted to produce 20,252 tons of soft lead. In addition the plant turned out 467 tons of lead piping in the same period. The latter were sold on the North African market.

The Oued el Heimer plant is equipped with ten Newman furnaces and a desilvering process was put into operation in 1951. The latter produced 18,452 kg. of silver during the first nine months of 1953.

Finally, an antimony foundry was started up in 1951, and in 1952-53 produced 80 tons of metal at 97 per cent, together with an antimony refining plant at Ain-Sebaa, near Casablanca, which also produced 200 tons of non-ferrous metal ingots from scrap.

CUTTING DOWN IMPORTS

By and large these foundries are capable of turning out high-quality products, alloys of copper, aluminium and steel, in fact alloys of all metals with the exception of nickel, sale of which is still controlled. The industry as a whole is designed primarily to supply local factories and plants, and particularly agricultural machinery workshops, with metal castings and mechanical parts.

This last objective fulfils an essential condition or the basic *raison d'être* of Moroccan industry: to produce goods at home which hitherto had to be imported, often from hard-currency areas, with a consequent adverse effect on the territory's balance of trade. Morocco's trade gap is still large, and the sole method of filling it is to produce more manufactured goods at home. Morocco's metallurgical industry has set out to achieve this goal.

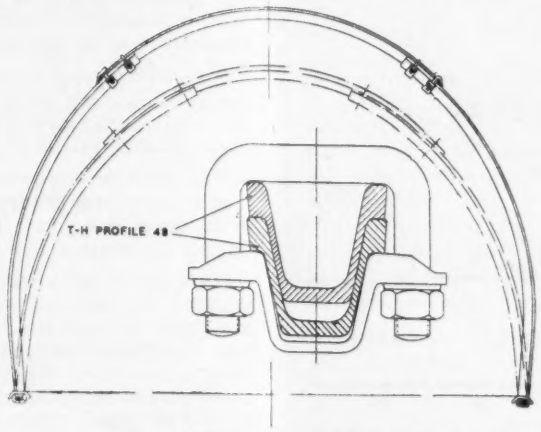
Yielding Supports in Collieries

By A. GRIERSON, B.Sc., A.M.I.Min.E.

The control of underground roof and floor convergence merits marked attention, as productivity and safety depend upon the study of the question and a sensible approach to its problems. In the following article the yielding supports used in collieries are fully discussed, and it is suggested initially that yielding supports may be divided into two basic categories, those depending for efficiency upon frictional resistance of surfaces, and those depending for efficiency upon pressure developed by compression of a fluid.

The question of controlled convergence of roof and floor is one that deservedly merits attention. Bad roof control, apart from any safety considerations, brings in its train a lowering of productivity. Recognizing that some degree of convergence in mine excavations is inevitable, and bearing in mind that axially loaded wood or steel props have a minimum of yield prior to collapse, it is apparent that some means must be found whereby this inevitable convergence may be accommodated.

The common method of enabling a degree of controlled convergence to take place is by interpolating soft wood lids between the vertical and horizontal members of the supports, or alternatively to stand the vertical members on stilts or soft wood sole pieces. When a wood lid is compressed there is a gradual increase in its resistance to compression, which in effect means that if identical lids were used throughout a working face, bed separation would be reduced as resistance increases. Normal compression of lids is of the order of 2 in., but it has been found in practice that if lids of varying thickness are used their compression resistance at any particular instant also varies. This results in uneven distribution of load and may prove detrimental to the condition of the roof and floor. It is not considered desirable to use lids more than 4 in. in thickness as excessive thickness of a lid reduces the stability of the prop and also results in the resistance developed in the lid to be late in its effect.



Toussaint-Heintzmann yielding arches

THE YIELDING SUPPORT METHOD

A more consistent method of taking up convergence is by the use of yielding supports. These are finding increasing favour both as permanent roadway supports and also to carry the roof at the working face. These yielding supports may be divided into two basic categories :

(a) those in which the movement within the support is dependent on the frictional resistance between existing surfaces in contact ;
(b) those in which the movement within the support is governed by the pressure developed by the compression of a fluid.

As is to be expected they are known simply as the friction type and the hydraulic type respectively.

YIELDING FRICTION SUPPORT IN ROADWAYS

The excellent roadways found in the steep measures in the Ruhr and other Continental coalfields have stimulated interest in the use of yielding supports in moving ground in Britain and elsewhere. There are, of course, many different types of yielding supports for use in gate-roads, a well known version being the Toussaint-Heintzmann yielding arch manufactured by the Bochumer Eisenhutte. For normal duty these consist of three-piece channel-section girders incorporating two sliding joints of high frictional resistance secured by means of two clamps at each overlapping joint. Occasionally, instead of two separate clamps each having two bolts, a single four holed clamp is used, the length of this clamp being dependent on the amount of initial overlap at each joint. The troughed shape of the individual sections of the girders allows of interchangeability.

When setting up the girders an overlap at each joint of 14 to 18 in. is usual, the clamps being adequately tightened. When pressure begins to take effect the strata movement is taken up by the section sliding one within the other. It is essential that during these periods of movement the clamp bolts be periodically checked and slackened or tightened as required. The striking of the arches with a heavy hammer facilitates uniform sliding at the joints ; this process is termed " tap control " and is tried twice per week for the first month. Yields of 30 in. are not uncommon. Firm lagging around the Toussaint-Heintzmann girders is very necessary and whilst struts are not essential their use can give decided advantages.

Where floor yield is also experienced Toussaint-Heintzmann yielding supports can be installed as complete rings. Here the supports consist of four channel-sections with a corresponding number of sliding joints.

HYDRAULIC SUPPORT IN ROADWAYS

So far as is known there has been little application of hydraulic gate-road supports, although the idea of mounting arch girders on hydraulic stilts has been propounded. These would function in much the same manner as the well known timber stilts which are clamped in the channel web by means of bolts and plates. Hydraulic stilts would obviously give much greater control over yield, and could be removed after the rear abutment following the face had advanced inbye of the girder setting. Thus the hydraulic stilts would be in operation during the period of major settlement and after removal of the stilts the arches could be set on the solid floor. Assuming the rear abutment to follow 60 yds. behind the face a total of 120 stilts would be required.

The development of the prop-free working front has contributed largely to the rapid growth in popularity of yielding supports on the face. Recently published figures show that there are well over 500,000 yielding props in

British coal mines. Despite the high initial capital outlay required to equip a face with yielding supports—these cost in the region of £10 to £12 each—the attendant benefits consequent to their use can make their introduction an economic proposition. Such benefits may be summarized as:

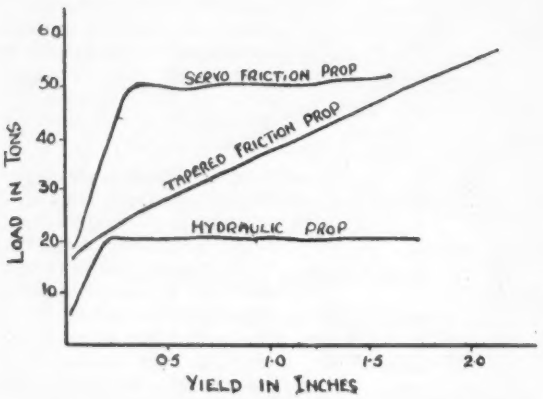
(a) controlled yield and uniformity of prop strength so giving better working conditions ;

(b) men employed withdrawing supports can operate in greater safety, as with many types of yielding props withdrawal can be effected with the miner well away from the prop site ;

(c) adequate allowance for vertical movement when setting support, so covering variance in seam thickness ;

(d) well suited for use with hinged bars ;

(e) given reasonable care and attention the supports have a long working life.



Typical load-yielding characteristics of yielding props

With regard to this last point it is imperative that irrespective of the size of the installation there should be an effective maintenance system in force. Records of all props should be kept, and regular service be given in situ and periodically on the surface.

FRICTION PROPS

In the essentials friction props consist of two members ; an upper extending member sliding between the jaws of a lock incorporated as part of the lower member, the lock serving not only to contain and hold the upper member, but also to control the yield and protect the prop against overload. Although the locks of friction props vary widely in their constructional details, the *modis operandi* is common to all : friction surfaces being incorporated in the lock against which the inner member slides. The friction surfaces are held against the sliding member by means of a wedging device. In some props the upper member is tapered and thus increasing loads are carried as convergence takes place. The design of taper is adjusted to give the necessary load resistance within the desired convergence limits. This taper ranges normally from 1 : 70 to 1 : 140.

In other friction props automatic movement of the locking wedges is allowed for after the initial setting by hand. This automatic locking is effected by the convergence of the roof ; this movement bringing into use the locking wedges and so achieving quick full locking load. Such props are said to be equipped with servo automatic locking, this being the general term for these automatic locking devices. Props incorporating the servo lock quickly take full load and only pressures in excess of this pre-determined full locking load will cause the prop to compress. The load-yield characteristics of the two principal types are indicated in the accompanying chart. As is to be expected the taper type has a gradually increasing load characteristic curve, whilst the servo equipped prop has a characteristic showing a quick rise from initial locking load to full carrying load, followed by a horizontal line indicating uniform resistance to compression.

One type of prop has both a tapered inner member and also a servo action in the yoke and so falls into both of the principal categories. In this prop, after yield load is developed further yield is accompanied by increased load.

The question of the suitability of any particular type of prop depends essentially upon the strata in which the prop is to be used and what is required of the prop. With the horizontal characteristic the quick taking of full load will minimize bed separation on the face but, however, trouble may be experienced at the waste edge in that the strata here may not be sufficiently stressed to cause regular collapse and cantilevering of the goaf roof will result.

Props with a rising characteristic will provide the necessary stressing of the roof at the waste edge, but for equivalent yield at the face will be taking less load than props having an early bearing characteristic.

With any type of yielding prop installed where a weak floor is in evidence the bearing capacity can be increased by the use of base plates. These are frequently fastened to the prop by means of a chain.

Friction props are subject to an occurrence known as load shedding. In effect, this is an excess of prop yield over the convergence giving rise to this yield, and is due to a gradual build up of strain energy in the prop members to the point where yield occurs. Yielding takes place when this strain energy exceeds the static friction energy of the sliding surfaces of the prop.

DYNAMIC COEFFICIENT OF FRICTION

Immediately yielding commences a dynamic coefficient of friction obtains between the surfaces in contact. The value of the dynamic coefficient of friction being somewhat less than that of the static coefficient of friction results in a momentary reduction of prop resistance. Consequently an increased yield is obtained than is commensurate with the load applied. This action is of split second duration, but in extreme cases this abrupt load shedding has so slackened the tightening wedges that the prop has collapsed.

Manufacturers have devoted much attention to this problem created by the difference in static and dynamic coefficients of friction and many props are now fitted with special alloy pads in an endeavour to minimize the difference between friction coefficients. It has been found in practice that the coefficient of static friction may be reduced by as much as 50 per cent by the presence of fine coal dust on the sliding surfaces and props which have been in use for some time underground occasionally behave erratically and their characteristic becomes unstable.

By far the best known of the hydraulic type of yielding prop is the Dowty and it is significant that there are no fewer than 250,000 such props in current use in British mines. The Dowty prop consists essentially of two tubes sliding one within the other, the lower tube being enclosed for protection within a casing. The sliding inner tube acts as the oil reservoir—Thelson C.D.T. or Anglo American Norpol 45—and to its base is welded a disc embodying a synthetic rubber sealing ring and a central aperture fitted with a spring loaded ball valve. This valve permits the flow of oil under pressure from the inner tube to the outer while preventing reversal of flow. In later models the

central aperture and ball valve have been replaced by a port serving the same purpose.

When setting the prop, the inner tube is raised by actuating an external detachable handle. This operates a piston inside the inner tube which reciprocates in a cylinder formed on the sealing disc. This piston incorporates a valve which, as the piston is raised, allows oil to pass from above the piston to beneath it. On the subsequent downstroke this oil is forced through the valve or port of the inner tube and so enters the outer tube. The oil being forced into the outer tube and below the inner causes the latter to be raised and so can the prop be extended to the desired height.

Yielding of the prop is achieved by means of a thin pipe connecting the underside of the inner tube to a point near the top of the prop. At this upper extremity is a spring loaded valve, the spring of which is so set that when the load on the prop exceeds a certain predetermined amount the valve lifts. This permits the compressed fluid in the lower tube to pass up through the connecting pipe and hence into the inner tube.

To withdraw the prop when it is under load a wire cable is attached to an external release link connected to the spring loaded relief valve at the top of the connecting pipe. A pull on this link via the wire unseats the valve against the spring and so the oil remaining in the lower cylinder can freely pass from the outer to the inner tube, thus enabling the prop to telescope.

The first Dowty props were designed for a yield load of 20 tons, but a 40 ton model has recently been put into operation. The load-yield characteristic is akin to the servo type mechanical yielding prop. The hydraulic prop load yield characteristic is remarkably stable and defects due to sluggishness of valves have now been overcome. A large range of sizes is available and props are available between 23½ in. and 92 in. extended length, the amount of extension being 5½ in. and 18 in. respectively. The initial setting resistance of all sizes is standardized at approximately 5 tons, this setting resistance being easily achieved by continuing hand-pumping for a few strokes after the upper end of the inner tube begins to bear against the roof.

Combinations of grouped hydraulic props carrying their own roof bars are undergoing trials, these being designed to propel themselves forward, so dispensing with the need for withdrawing and setting props and bars by hand. If these and other trials prove successful rapid development in the field of hydraulic support may be expected.

REVIEWS

South African Mining and Engineering Year Book, 1953-54 *—Published by the South African Mining Journal Syndicate Ltd. and Argus South African Newspapers Ltd. Pp. 664 with index. Price 63s.*

This well known work of reference is marked by many additions and improvements in this, the 41st issue. All main features are retained, however, and the primary object of permanently recording all speeches from the chair has been followed as in previous years.

The year book is divided into three major portions, the first, dealing with South Africa, presenting summaries on the Union's gold mining industry and on the Union's mining operations for all minerals. Other chapters discuss the materials purchased by the mines, the diamond industry and collieries, as well as base metals. Independent companies are discussed and a section is devoted to industry and commerce.

In a subsequent section the Rhodesias are introduced to the reader, while in the final section, presented as a directory, companies, government departments and public bodies are given. A most comprehensive volume in the tradition of its predecessors.

The Geology of the Country about Coolgardie, Coolgardie Goldfield, Western Australia—*Part I, Regional Geology, by J. C. Math, B.Sc. (Hons.Lond.); Part II, Selected Mining Groups, by N. M. Gray, B.Sc., and H. J. Ward, B.Sc. Issued under the authority of the Minister for Mines, Western Australia. Pp. 365 with index and illustrative charts.*

This bulletin is based on a geological examination of an area of approximately 1,000 sq. miles of country surrounding the famous Coolgardie gold locality, made during the field season of the years 1946 to 1948 inclusive.

The bulletin is divided into two parts, the first dealing with the regional geology of the area. In this section of the work the author has paid particular attention to the relation between geological structure and gold occurrence. His valuable suggestions have a bearing on the future search for gold in an area already well prospected.

The second part of the bulletin deals with the geology of some selected mining groups. Suggestions have been made by the authors which may be considered as useful to the prospector or mine owner engaged in working or prospecting small prospects in the groups examined.

A worthwhile publication, accompanied by a separate atlas of maps.

Steel Pipes for Water, Gas, Sewage and Air—*Published by Stewarts and Lloyds Ltd. Pp. 204 with illustrations. Bound hard back.*

The publishers indicate that the purpose of this catalogue is to give to users of pipes for the conveyance of water, gas, sewage and air, all particulars normally required, together with technical data likely to be of service. This purpose is fulfilled, and sections dealing with internal and external protection, joints and gravitation are included among much interesting matter.

Development of Mineral Resources in Asia and the Far East—*Prepared by the Industrial Development Division of the Economic Commission for Asia and the Far East. Published by H.M. Stationery Office. Pp. 366. Price 25s.*

The relevant matter contained in this publication has already been published in *The Mining Journal* during recent months. This matter is contained in the essential documents and the report of the Regional Conference on Mineral Resources Development held in Tokyo, Japan, during April, 1953.

East-West Commerce, Vol. 1, No. 1.—*Published by Foreign Correspondents Ltd. Pp. 12. Price 5 guineas per annum.*

This new monthly newsletter covers a wide range of trading news between the countries comprising the Eastern and Western Zones of Europe, while one mention is made of trade between the Uniited Kingdom and China. An interesting publication.

South Africa in a Changing World, *by Edgar H. Brookes. Published by Geoffrey Cumberlege, Oxford University Press. Pp. 151. Price 12s. 6d.*

The work under notice comprises a series of lectures delivered by the author to South African university students last year. This book deals essentially with the political and social aspects of South Africa's evolution and will thus be only of indirect—although nevertheless of ultimate—interest to students of the Union's industrial development.

MACHINERY AND EQUIPMENT

Wide Range of Exhibits

At the Castle Bromwich section of the British Industries Fair, *The General Electric Co. Ltd.* will show examples of its contributions to marine engineering and of equipment of all types for ships on Stand C503, 402. Although the company's services to shipbuilding and the shipping companies will be the principal theme of the exhibits, many of the items selected are of wide industrial application.

The important field of auxiliary electrical power for ships is represented by a 550 kW. turbo-generator set, and by examples of G.E.C. marine motors for D.C. and A.C. supplies. The 550 kW. marine auxiliary geared turbo-alternator set was built at the *Fraser and Chalmers Engineering Works,* Erith, Kent. This set, complete on a combined baseplate, is of the type being supplied to Shell Tankers Ltd.

A selection of D.C. and A.C. drip-proof motors for various auxiliary services will be shown, the largest being a 178 h.p. 440v. 3-phase horizontal spindle machine of a type used for boiler feed pumps. Aerofoil fans exhibited by *Woods of Colchester Ltd.* will include the new Maxcess pattern which comprises a retractable axial fan carried on hinges in a main casing which is flanged at each end for fixing. The retractable fan can be swung out from the main casing for servicing or inspection without disturbing the permanent fixture or electrical connections, and the fan can be kept running while it is swung out. Also shown is the S-type Aerofoil fan, which has an ultra-short casing covering the impeller only.

A Compression Type Cable Gland

Amongst the bodies which use Hawke compression type cable glands and sealing boxes for all types of cables are The British Electricity Authority and The National Coal Board. These glands are manufactured under licence by *H. Dunning and Co. (1946) Ltd.*, and the units are designed for V.I.R.S.W.A.S. cables.

The manufacturers state that speedy installation is achieved by use of these glands, together with a compact finish. The armouring is totally enclosed for protection against corrosion, and even pressure is exerted on each strand of armour by a patented method. A slip test has been made on Size B, which withstood a pull up to 1,456 lb. Complete elimination of water is assured on P.V.C. cables.

Chemicals at the Fair

Imperial Chemical Industries Ltd. will exhibit the products of several divisions in the Castle Bromwich section of the British Industries Fair. On Stand C617 and 516 a display will be presented with The Association of British Chemical Manufacturers.

On Stand D409 and 308 the Metals Division will display copper, brass, cupro-nickel, phosphor-bronze and other non-ferrous alloys in plates, sheets, strip, tubes, wire, rods and extrusions. Aluminium alloys in sheets, strip, rods, tubes and extrusions, plates and wire will also be displayed by the Metals Division.

The Plastics Division will exhibit on Stand D619. This division manufactures a wide range of thermosetting and thermoplastic raw material for industry.

On Stand D520 the Terylene Council, manufacturers of Terylene polyester fibre, will exhibit examples of industrial products made from Terylene for the engineering, chemical, electrical and other industries.

A Water Repellent-material

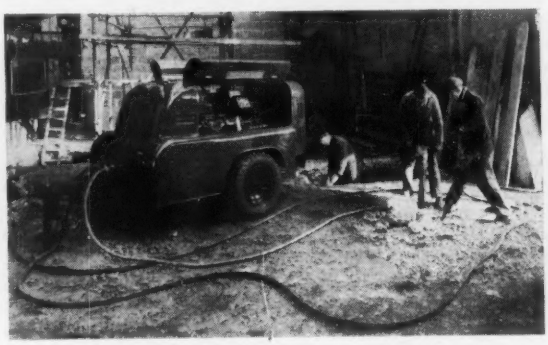
A colourless waterproofing and water repellent material for surface masonry is announced by the manufacturers, *Allweather Paints Ltd.* The material is based on a silicone resin which soaks into the capillary pores of the masonry and thus provides a water repellent film on surface and in depth.

Named Pitan, the material may be applied to masonry, brickwork, etc., and considerably reduces the risk of efflorescence. Spalling and cracking is largely minimized, and Pitan prevents deterioration of exterior surfaces by arresting water penetration. It thus has useful applications for surface works throughout the mining industry, in the United Kingdom and overseas.

First Portable Compressor Powered by Ford Diesel Engine

The first portable compressor powered by a Ford diesel industrial engine has been introduced to the British market by the *Atlas Diesel Co. Ltd.* Designed and manufactured in their Wembley factory, the production of this machine—the Atlas "One-ten"—until now has been entirely for export markets in North and South America, Australia and Scandinavia. An advantage of this two-tool portable compressor is the service and spares facilities afforded by two world organizations, the Ford Motor Co. Ltd. and Atlas Diesel Co. Ltd.

The diesel model compressor is a 2-stage, 2-cylinder, single acting, air-cooled, Atlas type NT9 arranged for forced feed lubrication and equipped with regulating valve with unloading device for one-step unloading adjusted to operate between 100-85 lb. p.s.i. (7-6 atmos). It has an engine speed reducer for light and no-load running, air intake filter intercooler with safety valve, flywheel and fan for intercooler. The compressor



The "One-ten" two tool portable compressor

is driven through an automatic centrifugal clutch by a 4-cylinder water-cooled overhead valve diesel engine equipped with replaceable wet cylinder liners, pneumatic governor, forced feed lubrication, 12-volt electrical starting equipment, starting handle and manual decompressor for emergency hand starting, cooling system with radiator and thermostat, cooling water pump and fan, oil bath air cleaner, and silencer.

The "One-ten" is fitted with two wheels (7.50 in. by 16 in. pneumatic tyres), sprung axle and over-run brakes and hand parking brake lever which means it complies with Traffic Act requirements for trailers in various parts of the world, including the United Kingdom. It also has a retractable front steady leg. The unit has a speed of 1,450 r.p.m. and a free air delivery in accordance with BSS 726 of 110 c.f.m. (3.1 cu. m/m). Overall dimensions of the unit are length 10 ft. 6 in., width 4 ft. 5 in. and height 5 ft. 1 in. It weighs 3,276 lb. net and 3,416 lb. in working order. Compressor power consumption at normal speed and maximum pressure is 28.2 b.h.p.

Magnets at the B.I.F.

Rapid Magnetic Machines Ltd. will exhibit a representative cross section of their permanent and electro-magnetic equipment on Stand C421 at Castle Bromwich. The Rapid portable foundry separator will again be demonstrated. An electro-magnet ore separator will also be on view, and a 20 in. dia. lifting magnet will be exhibited handling different shapes and sizes of steel.

Other units in the range of permanent equipment will also for the first time be available for inspection and include the Magnahump and Magnatrap, which are for inclusion in gravity, pneumatic or hydraulic ducts, pipelines, etc., and are essential where tramp iron is to be removed from liquid, semi-liquid or dry fibrous products. Electro and non-electric self-cleaning drum and pulley type separators will also be exhibited.

A New Hydraulic Overloader

On Stand Outdoor 1209 and 1108 at the Castle Bromwich section of the British Industries Fair, *F. E. Weatherill Ltd.* will display their hydraulic loading shovel at ¾ to 2 cu. yd capacities. Among the equipments on display will be the hydraulic overloader, which is capable of loading four cycles per minute. Depending upon the material handled, this can in turn mean a relatively easy 100 tons or more per hour. Greatly simplified operation is promoted by reduced steering effort and fewer clutch and gear change operations with a consequent saving in operator fatigue and mechanical wear and tear.

The ability of the machine to work successfully in spaces too small or restricted for ordinary mobile shovels, is exemplified by such operations as road building and maintenance, tunnelling operations, ships' cargo work and many other indoor and outdoor industrial tasks.

Technically the unit is an interesting machine in that the side arms are raised for the first part of their travel by a pair of main rams located on either side of the main frame towards the rear of the machine. At the extremity of their travel, a set of

The Weatherill Hydraulic Overloader

secondary rams take over and complete the overhead movement of the side arms and scoop. Crowding action of the scoop when pulling through the material is embodied and is achieved by two further hydraulic rams mounted on the side arms.

A further point of interest from the point of view of safety is that the side arms do not travel past the operator and although the load itself must obviously pass overhead, the cab is specially reinforced to provide protection from spillage. Discharge height and reach is ample for loading high-sided trucks or wagons.

The Weatherill Hydraulic Overloader is available with a ¾ or 1 cu. yd. scoop to which digger teeth may be fitted if required. It is an integrally built machine using the Fordson Industrial Tractor for power and transmission, the 4-cylinder diesel engine giving 44 b.h.p. at 1,800 r.p.m. 29 x 8 front and 1200 x 24 rear tyres are fitted as standard equipment and the hydraulic pump driven from the engine crank shaft is of the Vickers-Vane type.

Mining Equipment at the B.I.F.

At the Castle Bromwich section of the 1954 B.I.F., *Holman Bros. Ltd.* will display mining equipment in Stand Outdoor 1203 and 1102. The display will include compressed air equipment for mining, quarrying and all branches of engineering. The exhibits will include stationary and portable compressors, rock drills, air motors, winches and pneumatic tools for all purposes.

Engineering as a Career

A comprehensive booklet, beautifully illustrated and produced, has recently been published by the *North British Locomotive Co. Ltd.* under the title "Engineering as a Career." This offers details of the schemes of training offered to apprentices by the company, but at the same time some interesting data concerning the company is presented.

Total output to date comprises nearly 28,000 locomotives to all parts of the world. The company design and manufacture steam, electric, diesel-electric and diesel-hydraulic locomotives as well as the Voith North-British hydraulic transmission, Lima excavators, Pels machine tools and caterpillar tractors.

The Bristol "Proteus" Engine on Show

A model of the Bristol Proteus 700 series engine will be displayed on the stand of the *Bristol Engineering Manufacturers' Association* in the Castle Bromwich section of the B.I.F. The Proteus 700 series has been developed for the Bristol Britannia airliner, now in super-priority production. The initial production aircraft, the Mark 100, has four Proteus 705 engines, each developing 3,780 e.h.p., while the larger, Mark 300 Britannia (which is to replace the Mark 100 in production), has four Proteus 755 turboprops giving 4,150 e.h.p. each.

This is the third model of the Proteus to be put on display this spring. One model is on show at the Milan International Trade Fair while another was shown in April in Tokyo. This engine will be the first turboprop power unit ever seen in Japan.

Launder Screens as Aid to Anthracite Preparation

Using inexpensive easily constructed launder screens as auxiliaries to fine-coal cleaning equipment can help anthracite companies meet steadily increasing demand for smaller sizes of coal as a relatively cheap industrial fuel, according to a U.S. Bureau of Mines report.

Production of Buckwheat No. 4 and smaller anthracite sizes has increased nearly tenfold during the past 20 years, according to the report, and because of the prices received, producers cannot afford high processing costs on these sizes. As part of a broad programme to improve efficiency and economy in the anthracite industry, the Bureau made a study of seven plants where launder screens are being used to reduce preparation costs.

The launder screen, a baffled wooden trough covered with fine-mesh metal cloth, has long been used to screen, classify and deslime fine coal dredged from streams in the anthracite region. Used at only a few anthracite-preparation plants in 1949, it has proved so useful as an auxiliary to all types of fine-coal cleaning equipment that about 30 such plants have now adopted it. Seventy screens at 14 of these plants are processing 1,500 tons of fine coal an hour.

Electric Equipment at the B.I.F.

On Stand C509 and 408, Castle Bromwich, the *British Electrical Development Association* will emphasize the aid of electricity to the steel industry as its exhibition at the 1954 British Industries Fair. The handling and treatment of metal including furnacing, welding, tempering pressing, grinding and cutting, will be shown. The exhibit is displayed in conjunction with the Midlands Electricity Board.

A Display of Ceramics

Treatment of raw materials, including pulverizing, crushing, grading, mixing and drying of all raw materials will be shown on Stand D712 and 720 at the Castle Bromwich section of this year's B.I.F. by *Dohm Ltd.* The display will also emphasize the role of the company as a supplier of minerals, ceramics, abrasives and metal powders, as well as chemicals, vermiculite, colours and plastic powders.

Protective Equipment for Industry

On Stand D127, Castle Bromwich, *Siebe, Gorman and Co. Ltd.* will exhibit all types of protective industrial appliances at the 1954 British Industries Fair. These equipments will include breathing apparatus of various types, resuscitating apparatus, dust respirators, face shields, helmets, protective clothing, goggles and gloves. Diving apparatus will be shown, including the self-contained type.

METALS, MINERALS AND ALLOYS

This week the international situation, reflecting the anxiety inevitable at the opening of the Geneva Conference, and the reported weakening of French resistance at Dien Bien Phu have set the tone of all the metal markets with tin of course leading the procession. The future trend of trade in the United States has still to declare itself. A major recovery before the autumn seems to be regarded as less likely especially with the summer holiday period ahead, to say nothing of important wage negotiations, particularly in the iron and steel trade, drawing nearer. Some spotty price cutting is reported in the steel and rubber industries. Immense efforts are being made by the major automobile companies to increase sales, the necessity for which may be taken to illustrate the difficulties of a trade which is the largest steel consumer in the U.S. economy. One encouraging factor in the outlook is the large amount of investment by United States industry in the current year to modernize plant facilities and equipment. Some leading industrialists estimate that $16 billion will be invested in industry this year simply to combat technological obsolescence and sustain industrial growth in the face of rising payroll costs and more competitive selling prices.

In Mexico, the devaluation of the peso, coming as it did quite unexpectedly, has started a spiral of inflation. While prices everywhere rose sharply salaries remained static and panic buying followed.

COPPER.—Copper has been a firm market in London this week and has continued steadily firm in the U.S., where consumer demand especially by the brass mills is improving. April sales are reported in excess of 85,000 s.tons with 15,000 already down for May shipment. It is difficult at present to judge how much the improved demand is due to war-scare buying. Mr. Louis Cates, President of Phelps Dodge, stated recently that European demand had increased substantially while domestic consumption seemed at least to have levelled out.

It was recently reported from Santiago that Chilean copper sales from the resumption of official selling last December through to the middle of this month totalled 92,926 tonnes, including 57,000 to the United States, 31,000 to Europe and about 5,000 to South America. It was further stated that physical stocks in Chile as at April 17 totalled 58,500 tonnes. Coupled with the announcement of the completion this week of the 100,000 tons sale to the U.S. stockpile it would seem as if Chile's accumulated stocks which appeared so menacing even a couple of months ago, are being satisfactorily liquidated as proved to be the case after the pile-up of stocks on a somewhat lesser scale in 1952. At any rate, it would appear that about 75 per cent of current production in the four months since the resumption of official selling has been marketed.

As regards bids from other countries the Chilean Minister of Labour has given it as his opinion that his country could sell copper to the Soviet Union as elsewhere but that it would be poor business as with the United States normally by far the largest buyer it would be inadvisable to antagonize opinion there. (The Argentine Government was reported last week to be bidding for 50,000 tons of Chilean copper on behalf of the U.S.S.R.) He also stated that the labour unions had accepted a five-day working week in lieu of the present six-day provided that their members were paid for six days and payments to dependants were not varied. It would be interesting to know how the companies feel about this. Chile has found it necessary to ban the import of various goods and machinery, presumably to assist exchange rates.

In his address to shareholders this week, Dr. Thompson stated that Inco's copper sales during last year totalled 117,175 s.tons, approximately the same as in the two previous years.

LEAD AND ZINC.—At the recent meeting of the Lead Industries Association in Chicago, Mr. S. Cahn, Managing Director of Goodlass Wall, discussed lead consumption in its main avenues in Great Britain and pointed out that the recent decision of the British Government to modernize older buildings as part of the post-war programme would extend the field of use by the building trades for many years to come. Generally speaking lead's unequalled resistance to corrosion and its adaptability for easy jointing was all in favour of its use as against other materials. Mr. Simon Strauss (A.S. and R.) said that buying abroad now reflected the actual rate of consumption, while he expected that U.S. imports this year would continue at the lower rate prevailing in the fourth quarter of 1953.

Shipments of refined lead to U.S. domestic consumers in the first quarter of this year totalled 121,496 s.tons compared with 114,582 in the corresponding period a year ago. March shipments were largely responsible for this increase jumping sharply to 47,837 s.tons, an increase of over 10,000 tons on the preceding month, and the highest total since May of last year.

It was being rumoured at the end of last week that Canadian lead-zinc producers might be asked by the U.S. to reduce exports to that market. Now that free trading conditions have to a large extent returned to the lead-zinc market, it is difficult to see what is to be gained by such a request, as, unless it results in a cut-back of production, these surplus exports will only serve to depress the European market, which eventually is bound to react on the American price.

TIN.—Tin prices have been jumping and falling in their familiar vertiginous manner this week without obvious cause other than the prospects of war in South-East Asia developing or receding.

Reports of schemes to keep the Texas smelter in Government commission after the end of June have now taken shape in a resolution introduced by Senator Johnson of Texas to extend Government operation of the plant for a further year. Undeterred by the ridicule excited by the statement made before the Senate Small Businesses Sub-committee in 1951, the Senator is reported to have again raised the bogy of the "International Tin Combine" attempting to gouge the United States should the Texas smelter be closed down. However, perhaps the Senator should not be taken too seriously as he is said to have declared that if Indo-China were lost the only U.S. source of supply would be Indonesia, Malaya, Africa and Bolivia which broadly speaking is the situation which has existed for many years past, and it is difficult to controvert the testimony of the R.F.C. officials that they could see no reason to keep the smelter open. However Government officials stated at the beginning of the week that no final decision had been made.

Straits shipments for the first half of April are reported as 3,529 tons of which 2,000 were to the U.S.

ALUMINIUM.—The U.S. Department of Justice last week consented to the dismissal of its petition of last July to cancel a contract for the sale by the Aluminium Import Corporation of 600,000 tons of Canadian aluminium to Alcoa, deliverable over a period of six years. The Department of Justice had claimed that the contract gave Alcoa competitive advantages in the U.S. aluminium industry, though they had not challenged a similar contract for the sale of 186,000 tons to the Kaiser Aluminium and Chemical Corporation. Aluminium Limited, parent company of Alcan, and the Aluminium Import Corporation agreed to accept a court obligation to give priority to independent U.S. fabricators over contractual deliveries to Alcan. Last year they delivered some 150,000 tons to non-integrated fabricators as against an actual commitment of 110,000.

NICKEL.—Dr. Thompson, in his speech to the shareholders of International Nickel, a report of which appears in another column, said that the company's production capacity had been raised during the year by 12,500 s.tons to 137,500 s.tons. Deliveries of nickel increased during the year to 125,703 s.tons. Reserves for the end of the year he gave as 261,541,000 s.tons containing 7,816,000 s.tons of combined nickel and copper compared to 7,795,000 s.tons a year earlier. He stated that Inco had continued its aggressive search for new ore deposits.

PLATINUM.—It was stated at Inco's annual meeting this week that the company's sales of platinum metals last year totalled 270,000 oz. compared with 287,000 in 1952. The principal buyer was, of course, the United States.

QUICKSILVER.—On Tuesday the N.Y. price reached the record figure of $228-231 per flask, a gain of $11-14 over the price of the previous week. Here it is reported that there is no material available and the market is very firm at £82 10s. per flask.

TUNGSTEN.—The Ministry of Materials again advanced its selling price of tungsten ores (65 per cent grade and ordinary quality) from Tuesday last, by 10s. per l.ton unit to 245s. for wolframite and 240s for scheelite respectively delivered works. The Ministry has made it clear in announcing this latest increase that their sales prices include an element of service charges which at present are quoted at 10s. per l.ton unit. The true c.i.f. market price quoted by the Ministry is consequently 10s. below those reported here.

Fairly general demand for tungsten ore is reported to persist, but very little is coming forward which suggests that sellers are still holding out for higher prices.

There were rumours in New York last week that the U.S. government had resumed stockpile purchases of foreign tungsten ore. There is, however, no confirmation of this.

Iron and Steel

The steady decline in American steel production has been halted, whilst the volume of business recently placed in the area of the European Coal and Steel Community shows some improvement. These facts have helped to fortify confidence in the continued prosperity of the British iron and steel industry, whose recent output records are certainly profoundly impressive. In terms of labour productivity the industry's index rose from 142 in 1952 to 148 last year: whilst the rise in capacity has been even more spectacular. Substitution of new and bigger blast furnaces has raised the average furnace output from 92,600 tons in 1946 to 126,000 tons in 1953, and in the same period the average open hearth furnace output was increased from 36,800 tons to 52,600 tons.

With the exception of the light re-rolling mills all the plants are still very busy, but producers make no attempt to conceal their anxiety concerning the continued rise in costs. They are already carrying the heavy financial burden of higher wages and higher railway rates and on Monday next will have to pay an extra 2s. 11d. per ton for coal supplies.

Inevitably profit margins will be cut severely unless an all-round advance in steel prices is authorized, and such an advance would certainly be most inopportune at a time when European producers are reducing their quotations. British export prices for small steel bars and light sections are already above Continental prices, and there is only a small differential in regard to heavy sections and plates.

The rise in home production has made it possible to reduce steel imports very considerably. Last year's import figure of 1,100,000 tons represented a drop of 700,000 tons compared with 1952 and since the turn of the year there has been a further pronounced shrinkage. Small tonnages of sheet bars and slabs are still being imported but billet and wire rod requirements can be fully satisfied by British makers.

The London Metal Market

(From Our Metal Exchange Correspondent)

Since Easter the tin market has continued its relatively violent fluctuations but with an ever decreasing backwardation. Consumer demand is only fair and the market must await political developments. In the United States an effort is being made to prolong the life of the Texas smelter which, if successful, would absorb a large proportion of the Bolivian ore which is at present homeless, and by so doing would take care of the estimated surplus production for the current year—it being assumed that tin produced in Texas will automatically go into the stockpile. On Thursday morning the Eastern price was equivalent to £742 per ton c.i.f. Europe.

The lead and zinc markets have been less active than of late, reflecting the growing uncertainty about the situation. Demand for both metals continues at a satisfactory level, but there have been signs in America that a lead price of 14 c. per lb. may prove difficult to maintain. At the same time indications from the same quarter are that the zinc price may be raised to 11 c. per lb. and that determined efforts may be made to put it even higher. The report by the United States Tariff Commission was a colourless document in so far as its references to lead and zinc were concerned, as it seems to have limited its activities to giving details of the import figures, etc., leaving it to Congress to decide whether any action is to be taken on tariffs and quotas. In this connection it is worth while remembering that the existing rates of duty come under G.A.T.T. and that any alteration would give rise to a number of problems quite unconnected with the industries concerned.

Copper continues to have a very strong undertone with buyers showing renewed interest after the holidays. The actual price situation, however, is somewhat confused, as Chilean copper is being offered at several pounds below the quotations prevailing for Belgian and American metal. This is due to the fact that a number of countries have not yet made arrangements to pay for Chilean copper, thus directing all available offerings into a few channels. In the U.K. the Government Broker is now entering into the last month of his activities, and it seems probable that a scarcity of nearby copper may develop in June if consumers do not adopt a more liberal buying policy than is at present being observed.

The new Committee of the London Metal Exchange took office on April 26, and have elected Mr. Philip G. Smith of Messrs. Bassett Smith and Co. Ltd. as their chairman, and Mr. F. C. Chisnell of the Anglo Metal Co. Ltd. as vice-chairman.

Closing prices and turnovers are given in the following table:

	April 22		April 29	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£727	£730	£727½	£730
Three months	£719	£720	£725	£727½
Settlement	£730		£730	
Week's turnover	605 tons		620 tons	
Lead				
Current month	£91¾	£92¼	£93¼	£94
Three months	£89½	£90	£91½	£91½
Week's turnover	2,375 tons		2,750 tons	
Zinc				
Current month	£79⅜	£79½	£78¾	£79
Three months	£78½	£79	£78½	£79
Week's turnover	1,975 tons		4,500 tons	
Copper				
Cash	£245	£245½	£245½	£246
Three months	£233½	£234	£235½	£236
Settlement	£245½		£246	
Week's turnover	3,375 tons		5,725 tons	

OTHER LONDON PRICES — APRIL 29

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. .. £210 per ton
Crude (70%) .. .. .. £200 per ton
Ore (60% basis) .. .. .. 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, 99.5%, £156 per ton
Bismuth (min. 4 cwt. lots) 16s. lb.
Cadmium (Empire), 13s. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 249s. f.oz.
Iridium, £52 10s. oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £50 oz. nom.
Palladium, £7 10s. oz.
Platinum, £30/£31
Rhodium, £43 10s. oz.
Ruthenium, £23 oz.
Quicksilver, £82 10s. ex-warehouse
Selenium, 35s. 9d. nom. per lb.
Silver 73¼d. f.oz. spot and 73⅜d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 50% 7s. 3d. lb. c.i.f.
40% 6s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 12s. per ton c.i.f.
" Refractory £13 4s. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 102s. 4d.-103s. per unit c.i.f.
Wolfram (65%) .. .. .. World buying 240s.-250s.
" .. .. .. nom. 245s. U.K. Selling *
Scheelite (65%) .. .. .. World buying price nom.
" " .. .. .. 240s. U.K. Selling*
Tungsten Metal Powder (98% Min. W.) .. .. 17s. 8d. nom. per lb. (home)
Ferro-tungsten .. .. .. 14s. 8d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £53 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) .. .. .. 7s. 4d. - 7s. 9d. per unit
Brass Wire .. .. 2s. 6¾d. per lb. basis
Brass Tubes, solid drawn .. 1s. 11⅝d. per lb. basis

* These prices will take effect from April 23.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The past week saw a sharp break in the recent steady rise of markets. The big investment demand for gilt-edged stocks persisted in the early part of the period but a decline started on Monday, occasioned by the bad news from Indo-China and uncertainty and pessimism concerning the outcome of the Geneva Conference. Nevertheless, there was an improvement in the terms of trade figures in favour of the United Kingdom and the overall revenue deficit for the year to date is some £21,000,000 less than for the corresponding period last year. The international situation brought about a rise in the price of gold on the London market and it is now being quoted around 249s. 2d. per oz. Rumour has it that the Bank of England has been helping to keep the market supplied.

Kaffirs started the week with a good rally but later on interest tailed off. Johannesburg was looking better despite local disappointment concerning uranium profits. Finance houses, where changed, moved downwards with the exception of one or two companies interested in the Far West Rand.

Individual mines were mostly better on the higher gold price and lower cost factors, but uranium producers suffered from disappointment with figures so far announced. Uranium profits are in part being used to repay the local uranium board loans and this had previously not been fully realized in London. Investors will hardly like to see reduced gold production facilitating high uranium output if the full benefit from the latter is not going to be received. Nevertheless, the arrangements must be considered reasonable and sound. Naturally, shares like Randfontein, West Rand Consolidated, Luipaardsvlei and Western Reefs all suffered declines in some measure. The Goldfields group quarterlies show very good results of 100 per cent payability from West Driefontein. In additon, Doornfontein profits for the quarter were well up at £175,672 against £49,439. Among the older mines, Robinson Deep and Venterspost improved their position.

In the Orange Free State section, the Central Mining Group quarterlies disclosed good results from Harmony and Merriespruit and leaders in this field all advanced sharply in sympathy. Harmony are expected to start gold production soon. The big jump in President Brand can be attributed in part to the termination of the options.

In the West African and West Australian markets, business was very quiet but in the former there was a small upward movement in Ashanti, and in the latter Sons of Gwalia again eased due to uncertainty over the future of the mine.

In the miscellaneous gold section, there was little change. Indian mines looked slightly firmer but Falcon failed to respond to the news that the new roaster at the Dalny mine is now in operation.

There was little activity among coppers and prices tended to be irregular. Chartered, however, encountered some investment demand and there was some speculative buying of Bancroft.

Eastern tin shares signally failed to respond to the higher metal price and the market tendency was easier. In the Nigerian section, it was much the same story with very quiet trading conditions. The present price of tin has obviously improved the outlook for the Cornish Geevor property and the shares have been quietly gaining ground. Beralts were also higher on the improved outlook for tungsten.

Lead/zinc shares were encouraged by the higher dividend from North Broken Hill and Barriers generally hardened in sympathy. News was received of a uranium rush in the neighbourhood of Mount Isa and this prompted a sharp advance in the shares. The financial difficulties of Mexico caused a fall in the prices of San Francisco Mines and Fresnillo.

The good dividend and bonus from Central Provinces Manganese caused a sharp jump in the shares which fluctuated widely following the news. Elsewhere, more optimistic views taken of the long-term demand for coal in Africa caused a cautious rise in the prices of Wankie and South African Colliery.

	Price April 28	+ or — on week
FINANCE		
African & European	2⅝	—⅛
Anglo American Corpn.	6⅞	—⅛
Anglo-French	19/6	+3d
Anglo Transvaal Consol.	21/3	.....
Central Mining (£1 shrs.)	29/3	.....
Consolidated Goldfields	48/9	.....
Consol. Mines Selection	28/9	.....
East Rand Consols	2/9	.....
General Mining	3⅛xd	—⅛
H.E. Prop	38/1½	—7½d
Henderson's Transvaal	7/9	.....
Johnnies	43/-	—1/3
Rand Mines	3½	+⅛
Rand Selection	32/6	.....
Strathmore Consol.	31/3	.....
Union Corp. (2/6 units)	27/6xd	—1/3
Vereeniging Estates	4½	.....
Writs	35/-	+7½d
West Wits	41/10½	.....
RAND GOLD		
Blyvoors	36/-	+6d
Brakpan	9/1½	+1½d
City Deep	16/10½	.....
Consol. Main Reef	18/1½	+1/3
Crown	40/-	+7½d
Daggas	3½	.....
Doornfontein	24/-	—9d
Durban Deep	36/10½	.....
E. Daggas	12/9	+3d
E. Geduld .. (4/- units)	28/3	—3d
E. Rand Props	2⅜	+⅛
Geduld	3⅛	+⅛
Govt. Areas	12/-	—3d
Grootvlei	20/3	—3d
Libanon	10/9	.....
Luipaards Vlei	22/-	—3d
Marievale	18/3	+3d
Modderfontein East	15/-	.....
New Kleinfontein	15/-	—1/10½
New Pioneer	13/6	+9d
Randfontein	59/9	—1/3
Robinson Deep	15/-	.....
Rose Deep	15/-	+6d
Simmer & Jack	4/4½	+1½d
S.A. Lands	21/3	.....
Springs	4/1½	+1½d
Stilfontein	26/9	+9d
Sub Nigel	38/1½	+7½d
Van Dyk	4/9	+3d
Venterspost	12/9	+6d
Vlakfontein	14/9	+6d
Vogelstruisbult	34/9	.....
West Driefontein	5⅜	+⅛
W. Rand Consolidated	2½	.....
Western Reefs	47/6	+1/3
O.F.S.		
Freddies	6/1½	+4½d
Freddies N.	7/1½	+4½d
Freddies S.	7/-	+3d
F. S. Geduld	4½	+⅛
Geoffries	13/10½	+10½d
Harmony	32/6	+2/9
Loraine	10/-	.....
Lydenburg Estates	15/3	+3d
Merriespruit	12/7½	+1/4½
Middle Wits	14/-	+1/6
Ofsits	48/9	+3/1½
President Brand	54/-	+5/6
President Steyn	30/3	—3d
St. Helena	23/-	+6d
Virginia Ord.	13/6	+9d
Welkom	18/9	+1/-
Western Holdings	4⅛	+⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/6	.....
Ariston	5/6xd	—3d
Ashanti	20/9	+3d
Bibiani	4/6	—1½d
Bremang	1/10½	—1½d
G.C. Main Reef	3/3	.....
G.C. Selection Trust	6/3	.....
Kononga	2/6xd	—1½d
Lyndhurst Deep	1/-	.....
Marlu	1/1½xd	—3d
Taquah & Abosso	2/4½	—1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/9	.....
Gold Mines of Kalgoorlie	13/3	+3d
Great Boulder Prop.	8/3	.....
Lake View and Star	14/-xd	—3d
Mount Morgan	17/6	+3d
North Kalgurli	7/-	.....
Sons of Gwalia	5/-	—3d
South Kalgurli	6/9	—3d
Western Mining	11/6	+6d
MISCELLANEOUS GOLD		
Cam and Motor	9/-	+1½d
Champion Reef	4/6	.....
Falcon Mines	7/6	—1½d
Globe & Phoenix	21/9	.....
G.F. Rhodesian	5/3	.....
London & Rhodesian	4/3	—1½d
Motapa	1/9	.....
Mysore	4/10½	+4½d
Nundydroog	5/7½	+1½d
Ooregum	3/3	.....
Oroville	17/3	.....
MISCELLANEOUS GOLD (contd.)		
St. John d'El Rey	19/-	.....
Zams	33/9	—9d
DIAMONDS & PLATINUM		
Anglo American Inv.	4½	—⅛
Casts	23/6	—9d
Cons. Diam. of S.W.A.	4½	—⅛
De Beers Defd. Bearer	79/-	—1/-
De Beers Pfd. Bearer	16½	.....
Pots Platinum	8/3	.....
Watervaal	12/9	.....
COPPER		
Chartered	70/4½	+4½d
Esperanza	7/1½	+1½d
Indian Copper	4/6	.....
Messina	3½xd	—⅛
Nchanga	7⅛	—⅛
Rhod. Anglo-American	53/4½	+1½d
Rhod. Katanga	13/1½	+4½d
Rhodesian Selection	16/4½	+1½d
Rhokana	20⅜	+½
Rio Tinto	23	—½
Roan Antelope	16/7½	—1½d
Selection Trust	36/3	—3d
Tanks	74/3xd	—2/7½
Tharsis Sulphur Br.	52/6	.....
TIN (Eastern)		
Ayer Hitam	25/9	.....
Gopeng	8/1½	—4½d
Hongkong	7/-	—9d
Ipoh	16/6	—6d
Kamunting	8/4½	—4½d
Kepong Dredging	4/9	—1½d
Kinta Tin Mines	10/7½	—4½d
Malayan Dredging	26/3	.....
Pahang	12/3xd	—6d
Pengkalen	8/9	—3d
Petaling	8/1½	+1½d
Rambutan	14/6xd	.....
Siamese Tin	7/6	—4½d
Southern Kinta	16/-	—3d
S. Malayan	24/9	—6d
S. Tronoh	10/9	—3d
Sungei Kinta	11/3	.....
Tekka Taiping	6/3	.....
Tronoh	23/6	.....
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	14/6	.....
Beralt Tin	26/7½	+7½d
Bisichi	6/-	.....
British Tin Inv.	14/9	+1½d
Ex-Lands Nigeria	3/6	.....
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	12/3	+3d
Gold & Base Metal	3/6	.....
Jantar Nigeria	9/3	.....
Jos Tin Area	13/6	+1½d
Kaduna Prospectors	2/6	+1½d
Kaduna Syndicate	2/6	.....
London Tin	6/-	—1½d
United Tin	3/1½	—1½d
SILVER, LEAD, ZINC		
Broken Hill South	47/9	+3d
Burma Mines	2/3	.....
Consol. Zinc	32/-	—3d
Lake George	8/-	+1½d
Mount Isa	39/9	+2/3
New Broken Hill	24/6	—3d
North Broken Hill	2½	+⅛
Rhodesian Broken Hill	11/1½	+7½d
San Francisco Mines	16/9xbxd	—1/9
Uruwira	3/9	—1½d
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	42/3	.....
Associated Manganese	45/6	+6d
Cape Asbestos	27/3	+3d
C.P. Manganese	61/6	+2/9
Consol. Murchison	39/3	—3d
Mashaba	4½d	.....
Natal Navigation	2½	+⅛
Rhod. Monteleo	1/9	.....
Turner & Newall	75/6	—3/-
Wankie	13/4½	+1½d
Witbank Colliery	3⅛	.....
CANADIAN MINES		
Dome	$29¼	.....
Hollinger	$28½	+½
Hudson Bay Mining	$79	—1
International Nickel	$71½	.....
Mining Corpn. of Canada	£4¼	+⅛
Noranda	$124	+1
Quemont	£6½	+¼
Yukon	4/-	.....
OIL		
Anglo-Iranian	10⅞	—¼
Apex	48/1½	+1/10½
Attock	43/1½	—1/3
Burmah	77/6	—3/1½
Canadian Eagle	32/3	—3d
Mexican Eagle	19/1½	—4½d
Shell (bearer)	5⅛	—⅛
Trinidad Leasehold	21/3	+6d
T.P.D.	26/-	+9d
Ultramar	29/4½	—1½d

COMPANY NEWS AND VIEWS

Indo-China Halts Share Rise

Generally speaking, the stock market has been buoyant for several weeks and, apart from a short pause before the Budget, most sections in the House have seen good rises. This, in the face of the by now familiar "rolling re-adjustment" in the U.S.A., Molotov saying no in Berlin, crisis in the Middle East, hydrogen bombs, and other alarums, has been a pretty stout hearted display.

But this week, the awful words—Dien Bien Phu—have at last hypnotised the investor and brought the long share rise to a halt. Why this should happen one fine Monday morning in relation to a situation which has gradually been worsening for over seven years is, on the face of it, difficult to understand.

Those accustomed to taking one step to the rear to get the picture in focus, however, will have no trouble in putting the present situation in its proper perspective. In the first place it must be acknowledged that the British press have always had a blind spot wherever the French have been involved. Despite the fact that the present struggle in Indo-China has been a constant drain on France's resources it was usually considered as no more than a kind of glorified scrap in the Indo-Chinese jungle in which France was more concerned with preserving her *amour propre* than with trying to find a solution to the complex issues involved. Indeed, by many it was merely regarded as internecine strife and thus it seemed rather academic to talk of Indo-China as being the soft under-belly of the Malayan archipelago. Be that as it may, Dien Bien Phu, important in itself or not, has at any rate aroused the U.S.A. and it is possible that Britain too will become involved. This would not be difficult to understand, Malaya, Burma, Siam, even India and Ceylon, are open to the Communists once the Indo-China hurdle is cleared, and the consequences of that eventuality carried to its logical conclusion could mean that a very real effort would have to be made by this country in money, materials, and probably, men, to stem the massive advance of the Communists. Such long-term ruminations, unpleasant though they may be, must, of course, present themselves to all thinking persons.

It is hardly coincidence that commodities—tin, copper, lead, zinc, wolfram, rubber, etc.—have all shown remarkable firmness of late, and this must be identified with the unpleasant forecastings of what could happen if events turn out badly in Indo-China.

In any event, the Indo-China situation has gone some way to dispel the talks about surpluses in the commodity markets and there are signs that in the short term at least, prices of tin, rubber, copper, wolfram, lead, zinc, and other raw materials necessary to the smooth functioning of the armament programme may go higher.

I.C.I. in 1953

Imperial Chemical Industries, in an advance profit statement covering the calendar year 1953, have announced the recommendation of a final dividend of 9 per cent, making, with the interim of 6 per cent paid previously, a total of 15 per cent compared with 13 per cent on the present issued ordinary capital of £70,651,162. This is in accordance with the forecast by the Board made at the time of the capital structure changes and the scrip issue proposals in February last which are to be submitted for shareholders' consideration at the forthcoming annual meeting to be held on June 17 next.

The group profit before taxation for 1953 amounted to £36,968,150 compared with £29,617,134, and was struck after charging £11,551,012 (£10,138,595) for depreciation. This represents an increase of £7,351,016, nearly half of which, however, was absorbed by increased tax liabilities which amounted to £17,209,526 (£13,816,787), after reducing by £1,154,968 (£2,014,522) in respect of past overprovisions, and after increasing by £815,276 (nil) representing the estimated net income tax benefit due to initial allowances for 1953 taken to reserve for deferred income tax liability. The net profit of the group, therefore, was increased by £3,958,277 at £19,758,624.

Dividends and undistributed income of minority interests amounted to £891,621 (£722,429) and the company's share of undistributed income of subsidiaries was £1,262,935 against £1,578,962. The amount available for appropriation totalled £24,900,112 (£17,644,144), out of which the Board allocated £7,000,000 (£5,000,000) to obsolescence and replacements reserve and £6,500,000 (£2,000,000) to general reserve.

The dividend on the ordinary stock absorbed £5,828,721 (£4,963,244) and the net dividend on the preference stock required £926,990 (£884,856) leaving £4,644,401 to be carried forward compared with £4,796,044 brought in.

Coal in Southern Africa

Wankie Colliery, whose monthly production figures have been rather disappointing during the current year, have been experiencing difficulties occasioned by the fault encountered at No. 2 shaft which has resulted in production being reduced to about 8,500 tons a day compared with its normal output of 10,500 tons daily. This has meant that very substantial cuts have had to be made in the allocation of coal to non-priority users—priority users being the copper mines, the Rhodesia Railways and the power stations, which continue to be supplied with enough coal for their immediate requirements. Normally this would absorb 80 to 90 per cent of the coal produced. According to the Southern Rhodesia Mines Department, Wankie Colliery will not be able to resume normal production until about the middle of next month. The bad ground encountered at No. 2 colliery, which is a complicated system of faults extending the north shaft workings, and in No. 1 colliery, has been responsible for lower production and curtailment of development.

Other monthly coal production figures are given below.

MARCH COAL OUTPUTS

Company	*March (tons)*	*Months Since Year End*	*Cumulative Totals (tons)*	
			This year to date	*Last year to date*
Amal. Coll. of S.A.	593,182	3	1,705,814	1,821,210
Apex	85,092	3	231,563	237,578
Blesbok	46,758	3	135,590	151,149
Coronation	90,565	3	270,797	286,342
Dundee	31,018	3	102,540	110,130
Natal Navigation	99,548	3	298,875	330,023
New Clydesdale	70,894	3	209,633	134,313
New Largo	70,468	3	200,462	106,354
S.A. Coal Estates	144,106	3	409,183	426,987
Springbok	72,743	3	202,973	226,599
Transvaal & Delagoa†	112,486	7	838,583	—
Van Dyks Drift	47,021	3	146,014	146,984
Vierfontein‡	78,018	3	196,675	—
Vryheid Cor.	41,469	3	122,669	123,811
Vryheid Cor.*	35,267	3	102,073	109,042
Wankie Colliery	196,306	3	589,042	590,253
Wankie Colliery*	11,651	3	30,035	36,075
Witbank	142,574	3	429,586	368,873

* Coke † Production commenced Sept. 1953 ‡ Production commenced May 1953

Rhodesian Corporation's Interests Nearing Dividend Stage

Rhodesian Corporation, whose financial results for the year ended September 30, 1953, were given in these columns in our issue of April 9 last, has now issued its full report and accounts.

The Corporation's two major investments, namely, Falcon Mines and Rhodesian Brick and Potteries, made good headway last year and are now not far from being in a position to enter the list of dividend payers and thereby augment the Corporation's dividend income. In fact, the Board ot Falcon Mines has declared that the payment of a dividend is only waiting until its roasting plant is operating satisfactorily. Rhodesian Brick and Potteries' operations during the year ending September 30 last, showed a profit from brick making of £56,345 and a net profit of £23,657. This company's new Salisbury works commenced operations on a satisfactory production basis on March 1, 1953, and the Board believes that under normal conditions the plant is capable of earning satisfactory profits.

Since there is such a long interval between the publication of the report and the date of the annual meeting on June 10, the chairman, Mr. L. C. Walker, in his statement accompanying the accounts said that he would make additional remarks at the meeting on the position of the company's affairs up to date.

As previously announced, a net profit, after all charges including taxation, amounted to £25,268, the dividend distribution was maintained at 7½ per cent and the carry forward at the end of September last was £29,102 compared with £43,556 brought in.

Benguela's Operating Receipts Expand in March Quarter

The preliminary traffic results for the first three months of 1954 of the Benguela Railway Company, of which Tanganyika Concessions owns all the debentures and 90 per cent of the equity, announced net operating receipts of Esc.43,701,000, compared with Esc.24,270,502 earned in the March quarter of 1953.

Vereeniging Estates Pays 2½ Per Cent More at 30 Per Cent

The consolidated profit and loss account of the Vereeniging Estates and subsidiary companies for the year ended December 31, 1953, showed that the total net profit for the year, after providing £638,150 for taxation and taking into account appropriations made by subsidiary companies totalling £164,728, was £1,469,560. The total dividend distribution of 30 per cent per £1 share on the £2,750,000 issued capital required £825,000, leaving the carry forward at £580,193 divided as between the balance at credit of the parent company's profit and loss account amounting to £217,356, and the undistributed profits of its subsidiaries totalling £362,837.

Mr. T. Coulter is chairman and managing director. Meeting, Johannesburg, May 28.

Transvaal Consolidated Land Earns More Pays Same

Transvaal Consolidated Land and Exploration Company earned a net profit for the calendar year 1953 of £170,315 (£38,895), after providing for all charges including tax liabilities amounting to £67,640 compared with £46,174 in the preceding year.

The dividend has been maintained at 1s. 9d. per 10s. share on the £465,119 issued capital which absorbed £81,396, and after allocating £125,000 (nil) to general reserve the carry forward was reduced to £364,683 compared with £400,764 brought in.

Mr. T. Reekie is chairman. Meeting, Johannesburg, May 10.

Trinidad Central's Excellent Results

Trinidad Central Oilfields, which has been smashing its own monthly production records with an almost monotonous regularity these days, has now published a preliminary profit statement for the calendar year 1953 in which the payment of a final dividend of 30 per cent has been recommended, making, with the interim of 7½ per cent paid in January last, a total distribution for the year of 37½ per cent compared with 20 per cent in 1952. These good results reflect the increased production for the year which at 97,287 tons compare with 74,107 tons in the preceding year. The net profit for the year showed an advance of some £43,000, the actual figure for net earnings, after tax, being £107,095 against £63,827 in the preceding year. Taxation absorbed £153,233 against £80,890, and the carry forward, after allocating £21,425 (£21,425) to amortization reserve and £27,894 (nil) to general reserve, was £68,473 compared with £70,076 brought in. These figures are subject to final audit.

The outlook for the current year, even after three months have elapsed, is decidedly bright, and a total of 25,845 tons have been produced compared with 20,995 tons in the corresponding period of 1953—an expansion of 23 per cent.

MARCH OIL OUTPUTS

Company	*March (in tons)*	*Months Since Year End*	*Cumulative Totals (in tons)*	
			This year to date	*Last year to date*
Anglo Ecuadorian	26,788	12	313,081	298,476
Apex Trinidad	38,159	6	221,308	221,052
Attock Oil*	43,460	3	43,460	41,474
Kern Oilfields	27,943	10	274,129	260,634
Kuwait Oil†	3,098,895	2	6,425,653	6,410,523
Lobitos Oil	40,946	3	119,728	111,093
Trinidad Central	9,360	3	25,845	20,995
Trinidad Leaseholds	78,388	9	676,313	663,361
Trinidad Petroleum	40,329	8	314,592	329,519
‡Ultramar Oil	108,825	3	321,219	316,176

Note: 1 ton taken to equal seven barrels. ‡ Output figures are for S.A.P. Las Mercedes in which Ultramar holds a 50 per cent interest. Fig. for last year for March quarter only.
* Fig. given for March quarter
† Figs. given for February

Central Provinces Manganese Earn More and Pay More

An advance profit statement issued by the Central Provinces Manganese Ore Company, covering the year 1953, reports untaxed profits of £3,254,690 (including £270,376 attributable to the increase in value of lower grade stocks) compared with £2,863,538 in 1952. Total U.K. and Indian tax liabilities amounted to £2,200,000 (including £330,000 for E.P.L.) against £2,041,000 in the preceding year.

The company is recommending a final dividend of 2s. 6d. and a bonus of 2s. 9d., both free of income tax, making, with the interim tax free payment of 1s. 9d. paid in October last, a total distribution for the year of 7s., free of tax, per 10s. stock unit, which compares with a total payment of 6s., free of tax, in the preceding year. The total dividend distribution will require £700,000 (£600,000), and after allocating £200,000 to general reserve, £75,000 to contingencies reserve, £30,000 to the staff benefit fund, and £10,000 to the workers' welfare fund, the amount to be carried forward was £232,294 against £192,604 brought in.

The company is proposing to capitalize £800,000 of its reserves by a 50 per cent scrip issue.

Jelapang's Proposed Reduction of Capital

Jelapang Tin Dredging, whose dredge was laid up in December, 1952, after working out all its remaining dredgeable ground, has announced that it is proposing to reduce its authorized and issued capital from £120,000 to £6,000 by returning to shareholders 19s. per share, thus reducing the paid up value of the company's shares to 1s. To effect this proposal an extraordinary general meeting is to be convened shortly.

Although every effort is being made to acquire a new property suitable for the company's dredge, which is now on a care and maintenance basis, nothing has as yet been found. But the Board state that the funds remaining to the company after the capital reduction scheme should be suffcient to enable negotiations to be carried out for a new area if, and when, the opportunity arises. At the end of 1953 current assets amounted to £287,957, of which cash at bankers and in hand accounted for £252,872. Current liabilities were recorded in the balance sheet at £7,033. Mr. D. T. Waring is chairman. Meeting, Kuala Lumpur, Malaya, May 12.

Ultramar Receives Further Payment

The Ultramar Company has announced that it has received from its subsidiary, Caracas Petroleum S.A. by way of repayment of advances made to that company, the sum of £354,533. The company proposes on June 1 next to redeem £1 of each £9 Loan Stock 1962 at present outstanding (but without involving redemption of a fraction of £4).

Oceana Development Again Pays 10 Per Cent

The profit and loss account of the Oceana Development Company for the year ended December 31, 1953, showed that untaxed profit for the year expanded modestly to £14,445 against £12,077. After taking into account a tax credit amounting to £4,539, the tax liability for the year totalled £4,711, giving a net balance of £9,734 compared with £6,577 in the preceding year. The dividend was repeated at 10 per cent per 5s. share. The forward balance at the end of 1953 was £10,122 compared with £8,296 brought in.

Lake View Investment Trust Earns More, Pays Same

A preliminary profit statement issued by Lake View Investment Trust covering the year ended March 31, 1954, showed that, subject to audit, the net profit amounted to £140,976, compared with £129,056. Taxation charged in arriving at this figure was £158,354 against £150,476. The advance statement points out the receipts in excess of a normal year's income amounting to a net £5,696 (£10,875) have been excluded and credited direct to revenue reserve.

The company is recommending a final dividend of 17½ per cent (plus 2½ per cent), and a bonus of 2½ per cent (same) will be recommended at the annual meeting to be held on June 22. An interim dividend of 5 per cent (same) has already been paid. The ordinary dividends will absorb £96,250 against £85,750.

Larut Tin Fields Pay 1s.

During the year ended December 31, 1953, Larut Tin Fields earned a net profit, after all charges including tax, of £48,057 compared with £126,159 in 1952. The dividend distribution was reduced to 1s. (3s.) per 5s. share and required £42,000 (£126,000), leaving a balance for the year of £6,057.

Mr. D. T. Waring is chairman. Meeting Kuala Lumpur, Malaya, May 12.

Knudang Tin Reports Modest Profit

The profit and loss account of Kundang Tin Dredging for the calendar year 1953 showed a net profit, after all charges, of £6,116 as compared with a loss of £902 in 1952. The forward balance at the end of the year was £7,083 compared with £2,655 brought in.

Mr. D. T. Waring is chairman. Meeting, Kuala Lumpur, Malaya, May 12.

THE INTERNATIONAL NICKEL COMPANY OF CANADA LIMITED

YEAR OF SUBSTANTIAL PROGRESS AND EXPANSION

The Annual Meeting of The International Nickel Company of Canada Limited was held on April 28 in Toronto. **Dr. John F. Thompson,** Chairman of the Board of Directors, who presided, in the course of his speech said:

In 1953 the company again enjoyed a period of substantial progress marked particularly by important achievements in expansion of our production facilities and development of process improvements. The output of nickel, our principal product, was maintained at capacity for the fourth consecutive year, ore mined was at a new high and proven ore reserves at the year-end were the highest in the company's history.

Our nickel producing capacity at the end of the year was at an annual rate in excess of 275,000,000 lb., compared to about 250,000,000 lb. at the close of 1952. Deliveries of nickel, all to countries of the free world, also showed an increase over the previous year. Our ability to provide additional plant capacity and the progress achieved in our mining expansion programme made it possible for us to enter into a five-year contract with the United States Government for "quick" delivery of 120,000,000 lb. of metallic nickel and 100,000,000 lb. of electrolytic copper. Initial shipments under the contract were made in January, 1954.

Net earnings for the year of $53,694,000, or $3.54 a share on the common stock, were the third highest in the company's history and its strong financial position was well maintained. In 1952 net earnings were $58,891,000, or $3.90 a common share.

The company's price for nickel continued unchanged at the level of 60 c. (United States), or its equivalent, established in January, 1953. This price is up by 3½ c. per lb. from the 1952 level.

Common and preferred dividends paid to December 31, 1953, in the 25 years from January, 1929, after the present company had become the parent corporation, have totalled $623,118,000, out of net earnings of $794,655,000. The latest common dividend of 50 c. per share, paid on March 20 of this year, was the 153rd distributed on that stock.

Four quarterly common dividends of 50 c. per share were paid during 1953, together with a year-end extra dividend of 35 c., making a total of $34,258,000, or $2.35 a share. In each of the two preceding years common dividends of $37,903,000, or $2.60 a share, the highest for any year, were disbursed. In 1950, and in each of the three preceding years, dividends of $2.00 per share were paid on the common stock.

The company's deliveries of nickel in all forms during 1953 amounted to 251,417,000 lb. This volume was about 13 per cent greater than the average for the five years immediately following World War II.

GAS TURBINES AND JET ENGINES

The company has become a principal producer of heat-resistant alloys for the aircraft industry. Our alloys meet a wide range of jet engine requirements for materials of construction and they are used in turbine buckets and vanes, combustion chambers and after-burners.

It is reported that every British aircraft gas turbine has rotor blades made of one or another of the Nimonic nickel-chromium alloys produced by one of our United Kingdom subsidiaries and these alloys find widespread use wherever jet engines are produced. In Canada, Inconel "X" is used for turbine buckets and in the United States this nickel-chromium alloy has been adopted for turbine wheels in the turbo-compound engines used in transatlantic and transcontinental air transports, as well as for important parts of military jet engines.

Since the beginning of the development of atomic energy, nickel has played an important part, particularly in the concentration and processing of atomic fuels. A large amount of nickel is used in a variety of forms, including nickel-plated coatings, Monel, Inconel and nickel-containing stainless steels. Nickel and nickel alloys are required in pilot plant units for application of atomic energy for generation of power. The ultimate construction of commercial scale plants could, therefore, open a further outlet for nickel.

Our 1953 deliveries of 234,349,000 lb. of copper were maintained at approximately the same high level as in the two previous years. Canadian consumers received about 45 per cent of this total, the balance going principally to the United Kingdom, and also to Continental Europe and the United States.

PLATINUM METALS

Despite the small concentration of platinum metals in the company's ores, the refining methods are so efficient and the tonnages of ore treated are so large as to make it a leading producer of these precious metals.

There was a softening in the market prices for platinum and palladium in the United States during the first quarter of 1954. In March platinum was $84-$87 per oz. and palladium was approximately $21 per oz., as compared to $91-$93 for platinum and $22-$24 for palladium at the close of 1953.

OTHER PRODUCTS

Gold production of the company was sold at prevailing prices, mostly abroad and in accordance with Canadian Government regulations permitting exports of gold for sale at free market prices. Silver was in good demand and was sold either through established trade sources or to the Ottawa Mint.

Proven ore reserves at the end of 1953 stood at 261,541,000 s.tons, compared with 256,355,000 s.tons at the end of 1952. The nickel-copper content stood at 7,816,000 s.tons, compared with 7,795,000 s.tons at the end of 1952.

Our smelters, refineries, rolling mills and other plants operated at full or near capacity throughout the year, with the exception of the Bayonne, New Jersey, Works, where operations were interrupted by a strike lasting almost two months.

The construction of a $16,000,000 plant, near Copper Cliff, Ontario, for the recovery of nickel and of iron ore from nickeliferous pyrrhotite was begun in September. It will treat 1,000 tons per day of pyrrhotite concentrates in the first unit of an operation which will ultimately yield about 1,000,000 tons yearly of high-grade iron ore as a by-product of nickel recovery. Higher in grade than any now recovered in quantity in North America, this iron ore will contain at least 65 per cent iron natural and less than two per cent silica. It will command a premium price for direct use in open hearth and electric furnace steel production in Canada and the United States.

The output of electrolytic nickel at the Port Colborne, Ontario refinery showed an increase over 1952. A new research laboratory was completed during 1953, permitting more extended study of refining procedures.

At the Clydach, Wales, refinery a new improved wet treatment process is used to treat residues in place of the Orford process which was discontinued during the year. This represents the final passage in the life of the historic Orford nickel-copper separation process, dating back more than 60 years and on which the Canadian nicke lindustry was founded. Its replacement by better methods is indicative of the progress which we are making in nickel recovery processes.

The output at the Wiggin rolling mill in Birmingham, England, in 1953 was at a high level. During the year a new process laboratory was brought into operation.

At the company's precious metals refinery at Acton, England, process research continued to improve current operating methods and to initiate more economical techniques.

The large electric furnace plant of Birlec Limited, at Birmingham, England, had an excellent year.

DEVELOPMENT AND RESEARCH

The money we have spent in research over the years has brought great rewards. Many new uses have been found for our products; new products and new and improved metallurgical processes have been developed.

In the United Kingdom, the United States and Canada research has been extensive in the field of high temperature alloys which now are used widely in jet engines and are desired also for commercial gas turbines. At our Huntingdon Works these studies have led to the development of new wrought high temperature alloys which are now under field test and which it is hoped will contribute improved performances to jet engines.

Our Mond laboratories and our Clydach refinery have developed a special type of nickel powder now being commercially employed in a sintered plate nickel-cadmium battery, which offers good behaviour at very low temperatures and for high discharge rates. This new battery complements the long-established Edison nickel-iron storage battery.

OUTLOOK

Metallurgy and research are a means of revealing and employing the latent worth possessed by nickel, which in many instances does what no other metal can do. It is on this premise that further progress of the nickel industry largely depends. Your company, as the world's leading nickel producer, has for over half a century devoted much time and effort to its search for new applications for the metal. As I have said before, it is to be hoped that other producers and those newly coming into the field will feel, as we do, that production carries with it the responsibility for developing and expanding the market for nickel.

JOHANNESBURG CONSOLIDATED INVESTMENT CO., LTD.

(Incorporated in the Union of South Africa)

MINING COMPANIES' REPORTS FOR QUARTER ENDED MARCH 31, 1954

GENERAL REMARKS—The revenue from gold has been calculated on the basis of gold at 248s. 2d. per ounce fine for January, 248s. for February, and 247s. 9d. for March, 1954.

In determining the payable development footage gold has been taken at 248s. 3d. per ounce fine.

The development figures mentioned below are the actual results of the sampling of development work on reef ; no allowance has been made for modifications which may be necessary when computing the ore reserves. 10 and 11 Austin Friars, London, E.C.2. April 22, 1954.

THE EAST CHAMP D'OR GOLD MINING COMPANY LIMITED

(Incorporated in the Union of South Africa)

ISSUED CAPITAL.....**£259,875**

Crushed **70,000** tons ; yielding **6,909** ounces fine gold

	£		Per ton crushed s. d.		Per oz. fine gold produced s. d.
Revenue from Gold	85,662	..	24 6		
Working Costs	132,262	..	37 10	..	382 10
	46,600	..	13 4		
Sundry Revenue	659				
Loss for Quarter	45,941				

Sums totalling **£20** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

BORROWING POWERS—At the Extraordinary General Meeting of Shareholders held on February 25, 1954, the borrowing powers of the Directors were increased to the amount of twice the issued and paid up capital of the Company for the time being to enable the Directors to arrange short-term loan facilities in order to assist in financing the Company's operations during the period of transition from the working of the Main Reef Series to the working of the Bird Reef Series, and pending the receipt of revenue from the production of uranium oxide.

URANIUM PROJECT—Expenditure during the quarter in connection with the Uranium Project amounted to **£41,599**, making a total to date of **£212,594** ; the Uranium Loan, together with accrued interest, totalled **£207,026** at March 31, 1954.

The transfer of mining operations from the reefs normally worked for their gold content to the uranium bearing Bird Reefs continued during the quarter. The low gold content of the ores derived from the latter source reduced the overall grade of ore milled and the revenue derived from sales of gold. Slimes residues were pumped during February, 1954, to the Uranium Treatment Plant at Randfontein Estates ; the treatment of slimes at that plant commenced during March, 1954.

The plant is not yet operating to full capacity but revenue from the production of uranium will be included in the results for the month of April, 1954.

DEVELOPMENT—The **DEVELOPMENT FOOTAGE** sampled totalled **925** feet and gave the following results : **PAYABLE, 660** feet, having an average value of **27.3** dwt. over **8** inches. **UNPAYABLE, 265** feet, having an average value of **2.2** dwt. over **38** inches.

NEW STATE AREAS LIMITED

(Incorporated in the Union of South Africa)

ISSUED CAPITAL.....**£1,514,037**

Mining operations ceased at the end of February, 1954. During January and February, **21,000** tons were crushed. The recovery of gold from this source and from the treatment of old residues and general clean-up of the reduction plant during the quarter amounted to **8,258** ounces. The excess of revenue over expenditure was **£14,262**.

In addition to the above, **£25** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

The Government's share of profits and taxation for the quarter are estimated at **£7,403**.

Reclamation of plant and machinery from underground is proceeding. Sales of equipment realised **£2,103** during the quarter.

GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN) CONSOLIDATED LIMITED

(Incorporated in the Union of South Africa)

ISSUED CAPITAL.....**£1,400,000**

Crushed **765,000** tons ; yielding **98,042** ounces fine gold

	£		Per ton crushed s. d.		Per oz. fine gold produced s. d.
Revenue from Gold	1,215,563	..	31 9		
Working Costs	1,142,485	..	29 10	..	233 1
	73,078	..	1 11		
Sundry Revenue	17,013				
Profit for Quarter	90,091				

In addition to the above, **£280** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

The Government's share of profits for the quarter is estimated at **£9,859**.

PYRITE RECOVERY PLANT—Work continued throughout the quarter on the erection of the Pyrite Recovery Plant and it is expected that it will be in operation before June, 1954.

Expenditure during the quarter amounted to **£148,236**, making a total to date of **£399,792**.

It was previously estimated that the cost of the plant would be approximately **£360,000**, and agreements have been entered into whereby two-thirds of this amount, namely **£240,000**, will be provided by means of loans, repayable during the period of the agreement for the supply of pyrite to producers of acid for use in uranium plants. The remaining one-third of the cost is being borne by the Company.

Subsequently, the design of the plant was revised and it is now estimated that the cost of the plant will be approximately **£500,000**.

The Company will bear one-third of this sum, and it is expected that the remainder of the increased cost will be met from loan funds.

The amounts advanced to the Company, together with accrued interest, totalled **£180,690** at March 31, 1954.

DEVELOPMENT—The **DEVELOPMENT FOOTAGE** sampled totalled **4,060** feet and gave the following results : **PAYABLE, 1,620** feet, having an average value of **4.3** dwt. over **60** inches. **UNPAYABLE, 2,440** feet, having an average value of **1.9** dwt. over **42** inches.

THE RANDFONTEIN ESTATES GOLD MINING COMPANY, WITWATERSRAND, LIMITED

(Incorporated in the Union of South Africa)

ISSUED CAPITAL.....**£4,063,553**

Crushed **835,000** tons ; yielding **119,408** ounces fine gold

	£		Per ton crushed s. d.		Per oz. fine gold produced s. d.
Revenue from Gold	1,480,478	..	35 6		
Working Costs	1,471,262	..	35 3	..	246 5
	9,216	..	3		
Sundry Revenue	21,029				
Profit for Quarter	30,245				

In addition to the above, **£356** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

(*Note:* As expenditure incurred in connection with the Uranium Project ranked as an allowance for normal tax purposes, the Company was relieved from liability for normal tax for the quarter.)

URANIUM PROJECT—Expenditure during the quarter in connection with the Uranium Project amounted to **£682,574**, making a total to date of **£5,052,784** ; the Uranium Loan together with accrued interest totalled **£4,771,175** at March 31, 1954.

The transfer of mining operations from the reefs normally worked for their gold content to the uranium bearing Bird Reefs continued during the quarter. Preliminary operations commenced at the Uranium Treatment Plant during the last week of February, 1954, and these operations continued on an increasing scale throughout March, 1954. The plant is not yet operating to the full capacity but revenue from the production of uranium will be included in the results for the month of April, 1954.

Work on the expansion of the Project is proceeding.

DEVELOPMENT—The **DEVELOPMENT FOOTAGE** sampled totalled **3,700** feet and gave the following results : **PAYABLE, 1,625** feet, having an average value of **5.1** dwt. over **58** inches. **UNPAYABLE, 2,075** feet, having an average value of **2.1** dwt. over **38** inches.

By Order of the Board, JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY LIMITED. London Secretaries, D. L. REYNOLDS, Secretary.

10 and 11 Austin Friars, London, E.C.2.

April 22, 1954.

ANGLO-TRANSVAAL CONSOLIDATED INVESTMENT CO. LIMITED

Mining Companies' Directors' Reports for Quarter Ended 31st March, 1954

Following are the reports on work done during the quarter ended March 31, 1954

ANGLO-TRANSVAAL COLLIERIES, LIMITED

The Sales Output of the Subsidiary Collieries controlled by this Company for the quarter ended March 31, 1954, totalled **261,143** tons.

EASTERN TRANSVAAL CONSOLIDATED MINES, LIMITED

PRODUCTION—The total tonnage treated by the four gold mines operated by this Company amounted to **54,520** tons, resulting in a working profit (including sundry revenue) of **£50,279** for the quarter.

Additional revenue from sales of gold at enhanced prices amounted to **£131**, making a total profit for the quarter of **£50,410.**

TAXATION—Taxation for the nine months ended March 31, 1954, in respect of total profits for this period amounting to **£151,236**, is estimated at **£36,000.**

CAPITAL EXPENDITURE—Capital Expenditure during the quarter amounted to **£16,486.**

DEVELOPMENT—The total development footage amounted to **11,840** feet.

REDUCTION PLANT—Construction work on the new Plant at the Sheba Mine is well advanced. In addition, excavations for foundations have been commenced in connection with the rearrangement of the reduction plants at the New Consort and the Agnes Mines.

POWER SUPPLY—The extension of the New Consort Power Station was sufficiently advanced to permit of the 3,000 K.W. Steam Turbine generating plant being brought into operation during February at half load, using one boiler. The erection of the second boiler is nearing completion.

HARTEBEESTFONTEIN GOLD MINING COMPANY, LIMITED

SHAFT SINKING—No. 1 Shaft was sunk **982** feet to a total depth of **2,136** feet. In addition, **20,940** cubic feet were excavated in the cutting of a water service station at a depth of **1,590** feet and of a pump chamber at a depth of **1,930** feet.

The intersection in pilot holes of water-bearing fissures, requiring cementation, considerably delayed sinking operations.

The formations traversed in the shaft were Dolomite to a depth of **1,815** feet, followed by **61** feet of quartzites and conglomerates of the Black Reef Series to a depth of **1,876** feet, and **67** feet of Ventersdorp Lava to a depth of **1,943** feet, at which depth quartzites of the Upper Witwatersrand System were entered.

The shaft was concrete lined to a depth of **2,110** feet, of which **1,006** feet were accomplished during the quarter. The equipping of the shaft was completed to a depth of **2,020** feet, of which **970** feet were accomplished during the quarter.

No. 2 Shaft was sunk **1,096** feet to a total depth of **1,761** feet. In addition, **10,560** cubic feet were excavated in the cutting of a pump chamber at a depth of **950** feet below the collar.

The intersection in pilot holes of water-bearing fissures, requiring cementation, considerably delayed sinking operations.

The formations traversed in the shaft were Dolomite to a depth of **1,468** feet, followed by **27** feet of quartzites and conglomerates of the Black Reef Series to a depth of **1,495** feet, at which depth Ventersdorp Lava was entered.

The shaft was concrete lined to a depth of **1,713** feet, of which **1,072** feet were accomplished during the quarter. The equipping of the shaft was completed to a depth of **1,640** feet, of which **1,080** feet were accomplished during the quarter.

EUROPEAN HOUSING—Additional to the **103** houses completed in an extension to the Stilfontein Township, a building programme consisting of **100** houses was commenced. At the end of the quarter **28** houses were in the course of erection as well as the second block of rooms in the Single Quarters.

Construction of roads and the provision of sewage, water and lighting services for the additional houses is well advanced. The second domestic water supply reservoir, of **40,000** gallons capacity, has been erected.

MINE BUILDINGS—A bulk store was erected in the Stores Yard. The construtcion of the second **600**-case explosives magazine was commenced.

LABOUR—The Labour strength at the end of the quarter was: Europeans, **185;** Natives, **1,054.**

CAPITAL EXPENDITURE—Capital Expenditure amounting to **£404,760** was incurred during the quarter. The total Capital Expenditure, including preliminary expenses, incurred to March 31, 1954, amounted to **£2,674,230.**

MERRIESPRUIT (ORANGE FREE STATE) GOLD MINING COMPANY, LIMITED

DEVELOPMENT—Development at **No. 1 Shaft** was resumed on the **35th** Level in January, 1954, and was commenced on the **31st** Level in February, 1954. Preparations for the commencement of development on the **26th** Level are in progress.

A total of **1,777** feet of development was accomplished. Progress was retarded due to the intersection in pilot holes of water-bearing fissures, requiring cementation.

In addition, **51,487** cubic feet were excavated in the widening of existing drives to make provision for tipping arrangements over the permanent ore passes.

The following are the sampling results of the quarter's development:

Footage advanced	**1,777**
Footage on reef (Basal Reef)	**342**
Footage sampled	**320**
Payable Footage Sampled	
Payable Footage	**275**
Percentage payable	**85.9%**
Channel Width—inches	**46.3**
Channel Value—dwts.	**12.16**
Inch-dwts.	**563**

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuaion of the corresponding Ore Reserve.)

SHAFT EQUIPMENT—At **No. 1 Shaft,** the installation of the permanent shaft equipment was completed to a depth of **3,705** feet below the collar, of which **150** feet were accomplished during the quarter. The permanent 10-ton skips were installed. Work is proceeding on the erection of the permanent headgear.

At **No. 2 Shaft,** preparations for continuing shaft sinking operations are nearing completion. Work is proceding on the erection of the Sinking Hoist, the headgear, the batching plant and on the layout of the surface bank.

EUROPEAN HOUSING—Work was continued on the permanent housing programme in the Virginia Township. At the end of the quarter **72** houses were completed and work was proceeding on a further **18** houses and a Single Quarters block of rooms together with a Mess.

NATIVE HOUSING—At the end of the quarter, **1,438** Natives, including Contractors' Natives, were housed in the permanent compounds. Additional rooms are being erected at No. 1 Compound.

MINE BUILDINGS—The permanent shaft offices at No. 1 Shaft have been completed and are in use as temporary Mine Offices.

WATER SUPPLY—A pipe line has been laid to connect with the Irrigation Department's existing 27-inch main from Welkom to the Virginia Area and the Mine is now obtaining its water supply from the Irrigation Department.

LABOUR—The Labour strength at the end of the quarter was: Europeans, **184;** Natives, **1,224.**

CAPITAL EXPENDITURE—Capital Expenditure amounting to **£501,813** was incurred during the quarter. The total Capital Expenditure, including preliminary expenses, incurred to March 31, 1954, amounted to **£3,686,104.**

MIDDLE WITWATERSRAND (WESTERN AREAS), LIMITED

The Company retains its interests in Mineral Rights in the Virginia and Odendaalsrus Districts of the Orange Free State and in the Klerksdorp District of the Transvaal.

INTERESTS IN THE EASTERN TRANSVAAL—Options have been acquired by your Company and New Consolidated Eastern Areas (Proprietary) Limited, over a joint area in the Ermelo, Standerton and Bethal Districts of the Eastern Transvaal. In extent approximately **135,708** morgen. A total of **13,836** feet has been drilled on joint account with New Consolidated Eastern Areas (Proprietary) Limited, in 8 boreholes.

The following tabulation gives the information disclosed by these boreholes:

Borehole Number	Farm	Depth at March 31, 1954 (Feet)	Formations Traversed		
			Borehole Depth (Feet)		Description
			From	To	
VLB.1	Vaalbank No. 47 District Ermelo	1,720 completed	0 1,040	1,040 1,720	Karroo System Phyllitic shales of the Swaziland System
DRP.1	Dorpsplaats No. 11 District Ermelo	2,160 completed	0 1,303	1,303 2,160	Karroo System Sheared quartzites of the Swaziland System
GDT.1	Goedgedacht No. 132 District Bethal	1,300 completed	0 1,061	1,061 1,300	Karroo System Chloritic schists of the Swaziland System
LNB.1	Liebenberg No. 13 District Standerton	2,671 completed	0 1,623	1,623 2,671	Karroo System Quartzitic rocks of the Swaziland System
TFN.1	Tweefontein No. 64 District Ermelo	1,974 completed	0 961	961 1,974	Karroo System Basic igneous rocks of the Swaziland System
NLP.1	Nelspan No. 34 District Ermelo	1,954 completed on April 2, 1954, at 2,065 feet	0 974	974 2,065	Karroo System Shaly rocks of the Swaziland System
HLD.1	Holland No. 8 District Ermelo	1,113 completed on April 1, 1954, at 1,151 feet	0 945	945 1,151	Karroo System Gneissic Granite
RST.1	Rietspruit No. 274 District Standerton	944 in progress	0	944	Karroo System

NEW KLERKSDORP GOLD ESTATES, LIMITED

PRODUCTION—Tons milled: **32,600,** yielding **4,018** ounces fine of gold.

Revenue from Gold	**£49,815**
Working Costs	**£54,303**
Deficit	**£ 4,488**
Sundry Revenue	**£ 659**
Working Loss for quarter	**£ 3,829**
Working Costs per ton milled	**33s. 4d.**
Working Costs per ounce fine recovered	**270s. 3d.**

In addition to the above revenue, **£3** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

The working loss for the quarter, as shown above, does not take into consideration interest on loans, amounting to **£1,478** for the quarter.

No liability was incurred for the quarter in respect of mining taxation payable to the Government.

DEVELOPMENT—The total footage advanced during the quarter amounted to **1,384** feet. Of **1,115** feet sampled, **290** feet, equal to **26** per cent., were classed as payable, having an average value of **4.52** dwts. over a channel width of **47.3** inches, equivalent to **214** inch-dwts.

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuaion of the corresponding Ore Reserve.)

PROSPECTING—Borehole T.L.44 was drilled to a depth of **200** feet in Witwatersrand Sediments. Reefs were intersected in the Commonage Reef Zone having negligible gold values.

CAPITAL EXPENDITURE—Capital Expenditure amounting to **£15,144** was incurred during the quarter on plant for uranium production.

RAND LEASES (VOGELSTRUISFONTEIN) GOLD MINING COMPANY, LIMITED

PRODUCTION—Tons crushed: **486,000,** yielding **83,325** ounces fine of gold.

		Per ton crushed
Revenue from Gold	**£1,033,554**	**42s. 6d.**
Working Costs	**£ 967,609**	**39s. 10d.** (232s. 3d. per ounce fine)
	£ 65,945	**2s. 8d.**
Sundry Revenue	**£ 9,800**	**5d.**
Working Profit for Quarter	**£ 75,745**	**3s. 1d.**

Working Costs per ton, **39s. 10d.,** include **5s. 5d.** in respect of development expenditure.

In addition to the above revenue, **£682** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Taxation and the Government's share of profits in terms of the Mining Lease, for the nine months ended March 31, 1954, in respect of total profits for this period amounting to **£171,689,** are estimated at **£9,000.**

CAPITAL EXPENDITURE—The expenditure on Capital Account during the quarter amounted to **£14,239,** of which **£7,748** was incurred on the sinking of No. 1 Tertiary Shaft.

(*Continued overleaf*)

SHAFT SINKING—No. 1 Tertiary Shaft. During the quarter **24** feet were risen in the portion of the shaft between the **36th** level and the sheave-wheel position and **37** feet were sunk below the **36th** level. All of this work was at small dimensions. In addition **7,344** cubic feet were excavated in sumps, ventilation ducts and travelling ways.

DEVELOPMENT—A total of **17,492** feet of shaft sinking and development was accomplished during the quarter, of which **7,510** feet were sampled, showing **2,990** feet, equal to **40** per cent., as payable.

Payable reef disclosures were distributed as follows:

Reef	Footage Sampled	Payable				
		Ft.	Percentage	Channel Width (in.)	Channel Value (dwt.)	In.-dwt.
Main Reef	2,125	1,055	50	37.2	5.85	217
Main Reef Leader	3,445	1,355	39	15.7	14.42	226
South Reef	300	180	60	13.0	40.60	527
Total Main Reef Series	5,870	2,590	44	24.2	10.04	243
Bird Reef	260	100	38	52.3	4.78	250
Kimberley Reef	1,380	300	22	54.6	3.68	201
Totals and Averages	7,510	2,990	40	28.2	8.48	239

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

VILLAGE MAIN REEF GOLD MINING COMPANY (1934) LIMITED

PRODUCTION—Tons crushed: **101,800**, yielding **15,389** ounces fine of gold.

		Per ton crushed
Revenue from Gold	**£191,338**	**37s. 7d.**
Working Costs	**£157,687**	**31s. 0d.** (**204s. 11d.** per ounce fine)
Working Profit for Quarter	**£ 33,651**	**6s. 7d.**

Working Costs per ton **31s. 0d.**, include **5s. 11d.** in respect of development expenditure.

In addition to the above revenue, **£180** accrued during the quarter in respect of additional revenue from sales of gold at enhanced prices.

UNDERGROUND FIRE—Operations were adversely affected by an underground fire on March 3 and 4, 1954, which caused a loss in profit during the quarter of **£2,371.** A claim for this amount has been lodged with the Insurance Company.

TAXATION—Taxation for the nine months ended March 31, 1954, in respect of total profits for this period amounting to **£108,828**, is estimated at **£37,000.**

CAPITAL EXPENDITURE—No Capital Expenditure was incurred during the quarter.

DEVELOPMENT—8,145 feet of development were advanced during the quarter and **5,669** feet of old drives and crosscuts were reconditioned.

In addition, **2,051** feet of underground diamond drilling were done as an aid to development, and in exploratory work.

VIRGINIA ORANGE FREE STATE GOLD MINING COMPANY, LIMITED

DEVELOPMENT—A total of **9,850** feet of development was accomplished and, in addition, **291,118** cubic feet were excavated in sumps, pump chambers and in service bays. The whole of this work was at No. **1** Shaft, development at No. **2** Shaft, which is in use, temporarily, as an upcast ventilation shaft, having been suspended in December, 1953. Progress was retarded due to the intersection in pilot holes of water-bearing fissures, requiring cementation.

The following are the sampling results of the quarter's development:

	No. 1 Shaft and Total
Footage advanced	**9,850**
Footage on reef	**3,982**
Footage sampled	**3,960**
Payable Footage Sampled	
Payable Footage	**2,205**
Percentage payable	**55.7%**
Channel width—inches	**29.9**
Channel value—dwts.	**8.26**
Inch-dwts.	**247**

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

SHAFT EQUIPMENT—At **No. 1 Shaft** the permanent underground loading and measuring chutes were completed and a spillage winch was installed.

STOPING—Stope preparation was commenced at No. **1** Shaft during the quarter.

REDUCTION PLANT—Trial milling operations were continued during the quarter using mainly development rock, with some ore from stopes. Construction work is in progress on extensions to the Reduction Plant to provide a milling capacity of **75,000** tons per month.

URANIUM AND ACID PLANTS—Construction work on the Uranium and Acid Plants is proceeding.

MINE BUILDINGS AND PLANT—No. 1 Shaft Area. The permanent change houses were completed and work was continued on extensions to the workshops, and on the surface track layout.

The building of the permanent mine general offices is well advanced.

Work was continued on the construction of the railway line from Virginia Station to the Mine.

The erection of the Esscher Wyss compressor is proceeding.

EUROPEAN HOUSING—Work was continued on the extension to the permanent housing programme. During the quarter **64** houses were built, bringing the total to **364** houses completed in the permanent quarters in the Virginia Township, and work is proceeding on a further 23 houses.

NATIVE ACCOMMODATION—The erection of additional rooms at No. **1** Compound was completed and work is proceeding on the erection of the Compound Administration Block and the Native Time Office.

LABOUR—The Labour strength at the end of the quarter was: Europeans, **516;** Natives, **2,847.**

CAPITAL EXPENDITURE—Capital Expenditure amounting to **£1,159,735** was incurred during the quarter. The total Capital Expenditure, including preliminary expenses, incurred to March 31, 1954, amounted to **£10,211,843.** Included in this amount is a total of **£1,093,205** expended on Uranium and Acid production.

RAND MINES, LIMITED

(Incorporated in the Union of South Africa)

SUMMARISED BALANCE SHEET, 31st DECEMBER, 1953

CAPITAL AND RESERVES

	£
Share Capital—Authorized 2,200,000 Shares of 5s. each, £550,000. Less held in reserve 49,005 Shares of 5s. each held in reserve, £12,251.	
Issued—2,150,995 Shares of 5s. each	537,749
Revenue Reserves—For Investments £5,893,306 ; For Exploration £300,000 ; For Retiring Gratuities £100,000 ; Profit and Loss Account—Balance at December 31, 1953, £1,884,719	8,178,025
	£8,715,774

PROPERTY AND NET ASSETS

	£
Investments—	
Quoted Shares, Debentures, etc., at Cost or Stock Exchange valuation, whichever is the lower (Market Value—£10,638,927)	6,490,529
Unquoted Shares and Debentures at Cost or Directors' valuation, whichever is the lower	270,692
Government, Municipal and Public Utility Stocks and Debentures to secure Corner House Pension Fund Deposit, £1,022,023. Less Deposit by Trustees of Pension Fund £927,500	94,523
Fixed Assets—	
Trade Investments at Cost	1,159
Freehold Properties, etc.	29,332
Furniture, Plant, Vehicles, etc.	30,256
Subsidiary Companies—	
Shareholdings £71,527 ; Loans £44,700	116,227
Current Assets—	
Stores £19,418 ; Debtors, Loans and Payments in Advance £83,633 ; Dividends Receivable £325,803 ; Cash Deposits, Fixed and on Call £1,885,858 ; Cash at Bankers and in Hand £42,960—£2,357,672 *Deduct* Liabilities and Provisions: Creditors £255,584 ; Shareholders—Dividends £365,424 ; Subsidiary Company—Current Account £985 ; Provision for Claims in Respect of Forfeited Dividends £52,623—£674,616	1,683,056
	£8,715,774

EXTRACT FROM PROFIT AND LOSS ACCOUNT

	£
PROFIT BEFORE TAXATION	670,297
Add: Taxation—Net credit adjustment	4,115
PROFIT AFTER TAXATION	674,412
BALANCE UNAPPROPRIATED at December 31, 1952	1,878,008
	2,552,420
Deduct: Dividends—No. 100 of 3s. per share and No. 101 of 3s. per share £645,298	
Amount added to Exploration Reserve £22,403	667,701
BALANCE OF PROFIT AND LOSS ACCOUNT, at December 31, 1953, transferred to Balance Sheet	1,884,719

Note: A depreciation credit adjustment to maintain Investments at Cost, or Stock Exchange, or Directors' valuation where unquoted, whichever is lowest, resulted in an addition of £969,599 to the value of the portfolio and to Investment Reserve.

The full Report and Accounts may be obtained from the London Secretaries, A. Moir & Co., 4 London Wall Buildings, London, E.C.2.

Mining Men and Matters

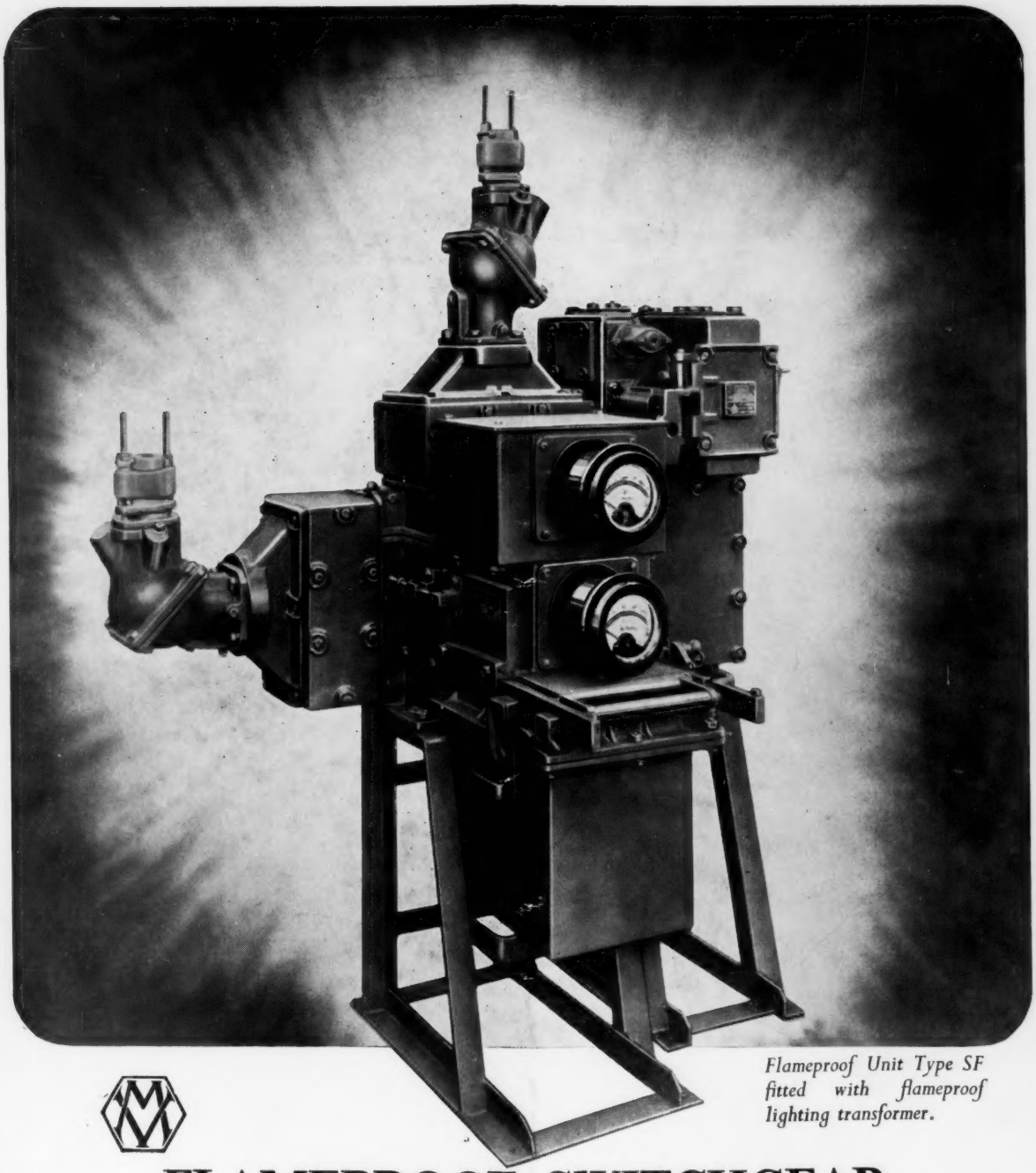
East Daggafontein Not Contemplating Uranium Production.—In reply to a question at the Annual General Meeting of East Daggafontein Mines Ltd., held in Johannesburg on Tuesday of this week, the chairman said the board did not contemplate uranium production for the company. The matter had been investigated he said but he was not at liberty to disclose details.

Institution of Industrial Safety Officers. It has now been announced that the Institution of Industrial Safety Officers has been formed with a founder membership of 500 executive grade persons engaged in accident prevention in industry. For the past 8 years activities pertaining to accident prevention in industry were conducted by a section of the Royal Society for the Prevention of Accidents. Those interested in the prevention of industrial accidents are invited to address their enquiries to the Office of the Institution of Industrial Safety Officers at 52 Grosvenor Gardens, London, S.W.1.

Uruwira Minerals Appoint W. H. Stentiford and Co. as London Registrars.—Tanganyika Holdings Ltd., have resigned as London Registrars of Uruwira Minerals Ltd., as from April 30 next and Messrs. W. H. Stentiford and Co., 1 Board Street Place, London, E.C.2, have been appointed London Registrars as from May 1.

Messrs. G. C. Hutchinson and G. F. Webster have resigned from the London Committee and Messrs. W. F. Talbot, S. J. S. Eley (both of W. H. Stentiford and Co.), J. O. Ivens and K. B. Ivens have been appointed members of the London Committee as from the same date.

Metal and Mineral Trades



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